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Journal of International Marketing

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Qi Wang, Yubo Chen, & Jinhong Xie

Survival in Markets with Network Effects: Product Compatibility and Order-of-Entry Effects

This article proposes a new conceptual framework in which the impact of network effects (NE) on a pioneer's survival advantage compared with its early followers can be positive or negative depending on two important but previously ignored market characteristics (1) cross-generation product compatibility and (2) within-generation product compatibility The authors empirically test the theoretical predictions using data from 45 NE markets They show that these two types of compatibility affect the pioneer's survival advantage in opposite directions and that such directions are reversed when NE changes from extremely strong to extremely weak Specifically, in markets with strong NE, cross-generation incompatibility harms but within-generation incompatibility favors the pioneer's survival advantage Consequently, pioneers are likely to enjoy a survival advantage when their product is cross-generation compatible but within-generation incompatible However, in markets with weak NE, pioneer survival advantage is likely to occur under opposite conditions (i e , cross-generation incompatible but within-generation compatible) The policy analysis further suggests that the best survival condition for pioneers often turns out to be the worst for followers in these markets

Keywords network effects, product compatibility, order-of-entry effects, survival analysis

Network effects (NE) (also called network externalities) refer to the market phenomenon in which the value of a product or service to consumers depends on the number of users of that product or service (for a detailed discussion, see Katz and Shapiro 1985, 1994) With rapid advances in information technology and the digital revolution, NE have become an important characteristic of an increasing number of industries and product/service categories (e g , computers, communications, consumer electronics, software, financial exchanges, online auctions, home networking, social networking Web sites)

Markets with NE often exhibit significantly high market uncertainty and innovation risk (e g , Chakravarti and Xie 2006) For example, unlike traditional markets, consumer adoption utility in the NE markets depends not only on product quality but also on the size of the user base of the underlying technology (Katz and Shapiro 1994) This "installed-base effect" creates a unique "start-up" difficulty for innovating firms because the new product may offer little value to early adopters at the time of product launch because of its limited user base (Katz and Shapiro 1986) Furthermore, standards competition is common in the presence of NE (Shapiro and Varian 1998) During the past two decades, many fierce standards battles have occurred between incompatible technologies (e g , Betamax versus VHS VCR player, Microsoft Windows versus Apple Macintosh operation system, Blu-ray versus high-definition DVD player) Brutal standards battles not only reduce competing firms' profits but also make a "winner-take-all" market outcome more likely to occur (Schilling 2002, Shapiro and Varian 1998) These unique characteristics make survival a primary performance concern for firms competing in markets with NE (Srinivasan, Lilien, and Rangaswamy 2004)

An increasing number of researchers have addressed the implications of NE on emerging issues such as pricing (e g , Xie and Sirbu 1995), product line (Sun, Xie, and Cao 2004), software piracy (Haruvy, Mahajan, and Prasad 2004), cross-market NE (Chen and Xie 2007), indirect NE (Stremersch et al 2007), and new product success (Tellis, Yin, and Niraj 2009) Research has also provided empirical evidence of NE in various industries, including high-definition televisions (Gupta, Jain, and Sawhney 1999), video games (Shankar and Bayus 2003), CD players (Basu, Mazumdar, and Raj 2003), and personal digital assistants (Nair, Chintagunta, and Dubé 2004) However, few studies have been undertaken on firms' survival in NE markets

The survival literature suggests that firms' market entry order plays an important role in their ability to survive (e g , Golder and Tellis 1993) Various studies have provided empirical evidence for pioneer survival (dis)advantage under different conditions (e g , Lilien and Yoon 1990, Min, Kalwani, and Robinson 2006, Robinson and Min 2002)

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Because the installed-base effect exhibited in markets with NE implies both a higher first-mover risk and a higher first-mover benefit than traditional markets, the order-of-entry effect on survival in NE markets can be even more complicated and critical Despite the importance of survival in NE markets, however, pioneer survival (dis)advantage in such markets has received scant academic attention Recently, Srinivasan, Lilien, and Rangaswamy (2004) took the first step toward empirically investigating firm survival in markets with NE using data from 45 product categories Their work provides the first empirical evidence of the negative impact of NE on the survival duration of a pioneer's product However, their research focuses on pioneer products only and does not directly address the order-of-entry effect

The current research investigates the order-of-entry effect on survival in NE markets We propose that pioneers' survival (dis)advantage, compared with early followers, is contingent on product (in)compatibility, which is an essential product characteristic in these markets (e g , Chakravarti and Xie 2006, Katz and Shapiro 1985, Xie and Sirbu 1995) Specifically, we consider two fundamentally different types of incompatibility (1) cross-generation incompatibility (i e , if the underlying product is incompatible with previous-generation products) and (2) within-generation incompatibility (i e , if the product is incompatible with other products in the same generation) For example, current-generation DVD players are cross-generation incompatible with previous-generation VCR players but are within-generation compatible with each other

We begin by developing a theoretical framework on how a pioneer's survival (dis)advantage is jointly affected by NE and by the two types of incompatibility We then empirically test the theoretical hypotheses using data from 45 markets with different degrees of NE The results reveal some intriguing systematic patterns of contingency First, we find a significant interaction effect between NE and the two types of incompatibility In markets with weak NE, the two types of product incompatibility affect the pioneer's survival advantage in opposite directions Cross-generation incompatibility strengthens the pioneer's survival advantage, but within-generation incompatibility weakens it However, as NE increase, the impact of both types of incompatibility becomes weaker in their original directions, and eventually their directions are reversed, that is, when NE are strong, cross-generation incompatibility becomes harmful to the pioneer's survival advantage, but within-generation incompatibility becomes helpful Second, although the data reveal a lower average survival duration faced by pioneers than by early followers in markets with NE, we find some conditions under which pioneers can experience a survival advantage relative to the early followers It is striking that (1) such a pioneer survival advantage can occur in markets with both strong and weak NE and (2) the two cases (strong or weak NE) require opposite compatibility conditions Specifically, we find that pioneers have longer survival duration than early followers in markets with strong NE if the pioneer is cross-generation compatible but not within-generation compatible and in markets with weak NE if the pioneer is within-generation compatible but not cross-generation compatible These findings provide important insights for both theory and practice

We organize the remainder of this article as follows In the next section, we present the conceptual framework and develop the hypotheses We then describe the data and estimation method and present the empirical results Finally, we discuss the contributions of this research and the managerial implications of the results

Conceptual Development

In this section, we first define product (in)compatibility and then develop six theoretical hypotheses The first four hypotheses focus on the impacts of two types of product incompatibility (cross- and within-generation) on pioneer survival advantage, and the last two hypotheses focus on the conditions under which pioneers are more likely to survive longer than early followers in markets with NE

Product Compatibility

Product compatibility is a fundamental issue in NE markets (e g , Farrell and Saloner 1985, Katz and Shapiro 1985, Xie and Sirbu 1995), though the technical definition of "compatibility" may be product specific To provide a more general definition of compatibility that can apply to different types of products, we adopt the term "interchangeability," which has been used to discuss standardization in the literature (e g , Kindleberger 1983) Specifically, we call the underlying products "compatible" if they are able to achieve interchangeability For products with direct NE (e g , communications networks, modems, facsimile [fax] machines, videoconferencing equipment), interchangeability refers to the interconnection between different networks For products with indirect NE (e g , hardware/software systems), interchangeability of products means that the components of one system can work with those of other systems (Katz and Shapiro 1994) For example, CD players from Sony and Philips are compatible because both players can play the same CDs However, ink-jet (and laser) printers from Hewlett-Packard and Canon are not compatible because they only work with their respective cartridges We believe that product compatibility is a potentially crucial survival factor for firms competing in NE markets because with incompatible products, firms tend to engage in standards wars Such a specific form of competition can significantly increase market uncertainty for all related players, such as manufacturers and producers of complementary products (Srinivasan, Lilien, and Rangaswamy 2006) Furthermore, standards competition affects consumer behavior because it imposes additional adoption risks (Chakravarti and Xie 2006) For example, adopting a product that uses a losing standard incurs significant costs for consumers Therefore, firm competition and survival rates among different market players differ greatly as a result of product incompatibility

The extant literature has considered two specific types of product incompatibility (1) cross-generation (e g , Choi 1994, Dhebar 1995, Postrel 1990) and (2) within-generation (e g , Farrell and Saloner 1985, Xie and Sirbu 1995) Cross-generation incompatibility occurs between products in different generations (e g , the fax machine versus the telegraph transmitter, DVD players versus VCRs) Within-generation incompatibility applies to products developed within the same generation (e g , VHS versus Betamax VCR players) Although the literature has examined the impact of product compatibility on some important firm strategies, such as pricing and advertising (e g , Chakravarti and Xie 2006, Farrell and Saloner 1985, Xie and Sirbu 1995), or consumer behavior (Chakravarti and Xie 2006), the impact of product compatibility on firms' survival ability has not been investigated Furthermore, it is important to understand whether these two types of incompatibility influence product survival differently In the following discussion, we examine how each type of product incompatibility might influence pioneer survival (dis)advantage and how these impacts might vary with the strength of NE

Impact of Cross-Generation Incompatibility

When products are incompatible with those of a previous generation, this incompatibility creates two opposite impacts on the order-of-entry effect and, in turn, on pioneer advantage in survival duration a positive "consumer preference" effect and a negative "market uncertainty" effect First, a positive consumer preference effect occurs because cross-generation product incompatibility strengthens a pioneer's ability to enjoy the first-mover advantage on consumer preference formation The first-mover advantage literature shows that one major source of pioneering advantage arises from consumer preference formation (Carpenter and Nakamoto 1989, Kerin, Varadarajan, and Peterson 1992) Carpenter and Nakamoto (1989) argue that when a new category is introduced and consumer category preference is not well defined, consumers tend to form their preferences in line with the market pioneer's product and consider its product the category stereotype When later entrants arrive, they are compared with the pioneer, the market stereotype, and thus may be perceived disadvantageously

In NE markets, introducing cross-generation compatible products limits the pioneer's ability to redefine consumer preferences In contrast, it seems reasonable that cross-generation incompatibility strengthens such a pioneer advantage because cross-generation incompatible products usually feature different technologies from those of the previous generation, which implies a significant product differentiation between the new-generation product and that of the existing generation For example, the DVD player was created as a result of the development of digital technology and was not compatible with its precursor, the VCR, which was based on analog technology When the DVD player was introduced, consumers needed to develop totally new preferences The significant product differentiation due to cross-generation incompatibility provides an opportunity for the pioneer to redefine consumer preferences (Dhebar 1995)

Second, a negative market uncertainty effect occurs because cross-generation product incompatibility intensifies the pioneer's disadvantage relative to that of later entrants on the degree of uncertainty encountered In general, when a new-generation product category is developed, the first mover often faces more uncertainties than later entrants because it enters the market with less information about the market's response to the new-generation product The survival literature (e g , Hannan and Freeman 1984) suggests that to have high survival likelihood, a firm must demonstrate its reliability to its customers, its investors, and its partners However, when a new-generation product is incompatible with that of the previous generation, such demonstration is significantly more difficult for pioneers than for later entrants because all important parties (e g , consumers, investors, complementary-product firms, retailers) face considerable risk by supporting the innovation This high risk can motivate the parties to delay their adoption of or support for the new-generation product until enough evidence exists to raise their confidence level in relation to the success of the innovation As a result, a pioneer can fail simply because its product is the first available of the new generation and it has no installed-base support from the existing-generation product

Furthermore, it is important to emphasize that the magnitude of such a negative market uncertainty effect of cross-generation incompatibility on pioneers' survival advantage increases with the strength of NE This increase occurs because the stronger the NE, the greater the likelihood is for consumers, investors, and downstream firms to delay their investment in the new-generation product, thus leading to the greater survival disadvantage of being the market pioneer

The overall impact of cross-generation product incompatibility on pioneers' survival advantage is determined by the net impact of these two opposite effects Note that the positive consumer preference effect does not vary with NE However, the negative market uncertainty effect intensifies when NE become stronger Therefore, we expect that, in general, the impact of cross-generation product incompatibility on pioneering survival advantage (the order-of-entry effect) decreases with the strength of NE Formally,

> H_1 The impact of cross-generation incompatibility on pioneer survival advantage decreases with the strength of NE

The first hypothesis specifies how the impact of cross-generation incompatibility on pioneer survival advantage changes when NE become stronger We now consider the overall effect of cross-generation incompatibility on pioneer survival advantage in markets with extremely weak and extremely strong NE In markets with extremely weak NE, the positive consumer preference effect may dominate the negative market uncertainty effect Thus, the net effect associated with cross-generation incompatibility on pioneering advantage would be positive As the NE increase from extremely weak to extremely strong, cross-generation incompatibility significantly intensifies the uncertainties that pioneers face compared with those that later entrants face, and the negative market uncertainty effect could dominate the positive consumer preference effect As a result, the cross-generation incompatibility could negatively affect pioneering survival advantage in markets with extremely strong NE

A good example is the television market, which exhibits strong indirect NE because the value of a television set (hardware) for a consumer strongly depends on the availability of television programming (software) in the market CBS invented the mechanical color television system in 1940 and was the first to launch color television to the American general public in 1950 (Fisher and Fisher 1997, Shapiro and Varian 1999) The CBS color television technology was cross-generation incompatible with black-and-white (B&W) television Existing B&W television sets could not pick up the color broadcasts from CBS stations, nor could the CBS color sets receive the B&W programs This cross-generation incompatibility created a huge market uncertainty regarding the public acceptance of the new-generation television sets Millions of B&W television set owners were unwilling to invest $100 for the CBS color sets, and advertisers were unwilling to sponsor broadcasts that were seen by few people Thus, as a result of the negative uncertainty effect of cross-generation compatibility, CBS's color television technology soon failed in the market

This discussion leads to the following hypothesis on the effect of cross-generation incompatibility in markets with extremely weak and extremely strong NE

> H_2 The impact of cross-generation incompatibility on pioneer survival advantage is (a) positive in markets with extremely weak NE and (b) negative in markets with extremely strong NE

Impact of Within-Generation Incompatibility

When products within a generation are incompatible, this incompatibility also creates two opposite impacts on pioneer advantage in survival duration a negative "product-differentiation" effect and a positive "installed-base" effect On the one hand, within-generation incompatibility can lead to a negative product-differentiation effect on pioneering advantage because, as is suggested in the order-of-entry literature, a later entry can outperform pioneers by introducing a distinctive product (Carpenter and Nakamoto 1989) In markets with NE, within-generation incompatibility enables the later entrant to achieve a higher level of product differentiation between its product and that of the pioneer (e g , Besen and Farrell 1994, Kim 2002) It also makes it more difficult for consumers to directly compare a later entrant's product with that of the pioneer Thus, incompatibility helps a later entrant distinguish its product from existing products, meet consumers' demand heterogeneity, and reduce long-term price competition (Katz and Shapiro 1986, 1994)

On the other hand, within-generation incompatibility can create a positive installed-base effect for pioneers relative to their early followers because within-generation incompatibility imposes a start-up difficulty for the later entrant As the first-mover advantage literature suggests, market pioneers can benefit from preempting the market and setting a high entry barrier for followers (e g , Lieberman and Montgomery 1988) In markets with NE, the most important entry barrier for followers is the installed-user base With within-generation incompatibility, a later entrant's product can only derive benefits from its own installed base rather than the combined installed bases of the pioneer's Moreover, within-generation incompatibility creates a huge switching cost to consumers of existing products (Farrell and Klemperer 2007) IBM's decision not to introduce its 4-inch floppy disk drive (FDD) provides an illustrative example of the positive installed-base effect enjoyed by the pioneer, Sony's 3 5-inch FDD As Porter (1983) reports, although IBM initially announced a plan to introduce a 4-inch FDD, it eventually gave up such a plan because the 3 5-inch FDD was increasingly adopted by computer system manufacturers and end consumers The installed base of the 3 5-inch FDD thus erected an entry barrier to IBM's 4-inch FDD and deterred its entry, providing a positive installed-base effect to the pioneer, Sony

Thus, the overall impact of within-generation incompatibility depends on the magnitude of these two opposing influences Note that the negative impact of within-generation incompatibility arising from the followers' product-differentiation effect does not vary with NE However, the positive impact of within-generation incompatibility arising from the pioneer's installed-base advantage is more significant in markets with stronger NE As a result, we expect that, in general, the impact of within-generation product incompatibility on pioneer advantage (the order-of-entry effect) increases with the strength of NE Formally,

> H_3 The impact of within-generation incompatibility on pioneer survival advantage increases with the strength of NE

In markets with extremely weak NE (zero in the extreme case), the start-up problem for market followers to establish an installed user base is negligible As a result, the negative impact of within-generation incompatibility from high differentiation for pioneers can dominate the positive installed-base impact Thus, the net effect associated with within-generation incompatibility on pioneering advantage would be negative As NE increase from extremely weak to extremely strong, within-generation incompatibility affects pioneering survival advantage positively because it imposes significant difficulties on followers in establishing their installed bases Thus, for market pioneers, the positive installed-base effect of within-generation incompatibility can dominate the negative product-differentiation effect For example, as a type of data communication network, the local area network (LAN) has an extremely high NE As the market pioneer, Xerox developed the Ethernet standard in the late 1970s to send data at a high speed among the laser printers within a LAN Several years later, IBM launched an incompatible standard, Token Ring, into the market Although its performance was believed to be superior to the Ethernet standard, the latter had such a large installed base that it could not be overtaken Eventually, Token Ring failed in the market, and Ethernet became the winning LAN standard (Shapiro and Varian 1998)

This discussion leads to the following hypothesis on the effect of within-generation incompatibility in markets with extremely weak and extremely strong NE

> H_4 The impact of within-generation incompatibility on pioneer survival advantage is (a) negative in markets with extremely weak NE and (b) positive in markets with extremely strong NE

Overall Order-of-Entry Effects

We now discuss the conditions under which pioneers are likely to have a survival (dis)advantage in markets. The previous discussion suggests that in markets with extremely weak NE, cross-generation incompatibility has a positive impact on pioneers' survival advantage, whereas within-generation incompatibility has a negative impact. As a result, when products are cross-generation compatible but within-generation incompatible, pioneers will be at a disadvantage compared with early followers. In contrast, when products are cross-generation incompatible but within-generation compatible, pioneers will be more likely to have an advantage in survival duration over the early followers. As NE increase from extremely weak to extremely strong, when products are cross-generation compatible but within-generation incompatible, pioneers can gain a strong survival advantage; when products are cross-generation incompatible but within-generation compatible, however, pioneers are at a disadvantage compared with early followers.

Thus, we formalize the following hypotheses on the overall order-of-entry effects:

H_5: When products are cross-generation compatible but within-generation incompatible, the pioneer survival advantage (a) increases with the strength of NE; (b) is negative in markets with extremely weak NE, such that the pioneer has a survival disadvantage; and (c) is positive in markets with extremely strong NE, such that the pioneer has a survival advantage.

H_6: When products are cross-generation incompatible but within-generation compatible, the pioneer survival advantage (a) decreases with the strength of NE; (b) is positive in markets with extremely weak NE, such that the pioneer has a survival advantage; and (c) is negative in markets with extremely strong NE, such that the pioneer has a survival disadvantage.

Note that when products are both cross-generation and within-generation compatible or incompatible, the two types of (in)compatibility have opposite impacts on pioneer survival advantage. Therefore, the overall order-of-entry effects become less significant because of such opposing impacts. The directions of the overall effects are ambiguous, depending on the magnitude of the two types of product (in)compatibility. Thus, there is no clear theoretical prediction in these cases, and the result is purely empirical.

In summary, our conceptual development suggests that the overall order-of-entry effect is contingent on the specific type of product compatibility and the strength of NE. Pioneers can have a survival advantage in markets with both strong and weak NE; however, the two cases require opposite compatibility conditions. We summarize the conceptual framework in Figure 1 and the theoretical hypotheses in Table 1.

FIGURE 1
Conceptual Framework for Hypothesis Development

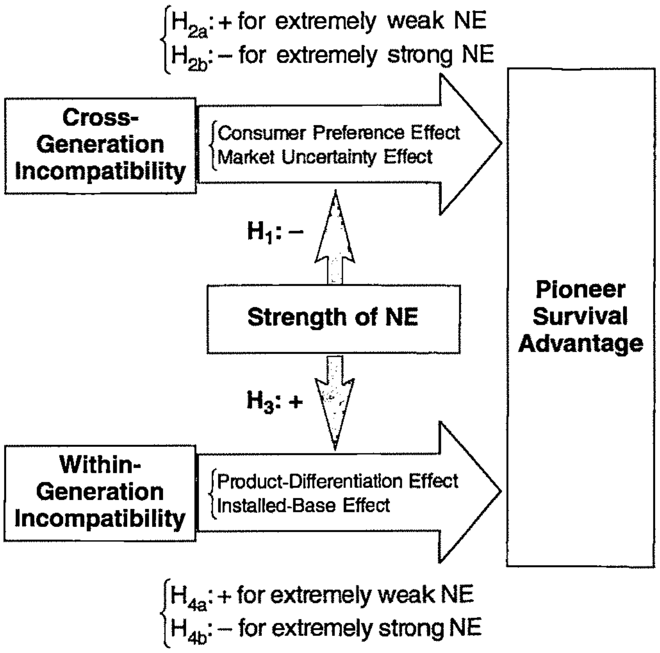
H_{2a}: + for extremely weak NE
H_{2b}: – for extremely strong NE
Cross-Generation Incompatibility
Consumer Preference Effect
Market Uncertainty Effect
H_1: –
Strength of NE
H_3: +
Within-Generation Incompatibility
Product-Differentiation Effect
Installed-Base Effect
H_{4a}: + for extremely weak NE
H_{4b}: – for extremely strong NE
Pioneer Survival Advantage

TABLE 1
Summary of Theoretical Hypotheses

A: Impacts of Product Compatibility on Pioneer Survival Advantage			
Cross-Generation Incompatibility		**Within-Generation Incompatability**	
Decrease with NE (H_1)		**Increase with NE (H_3)**	
Markets with extremely weak NE	Positive (H_{2a})	Markets with extremely weak NE	Negative (H_{4a})
Markets with extremely strong NE	Negative (H_{2b})	Markets with extremely strong NE	Positive (H_{4b})

B: Overall Order-of-Entry Effects on Product Survival Duration			
Cross-Generation Compatible/ Within-Generation Incompatible		**Cross-Generation Incompatible/ Within-Generation Compatible**	
Increase with NE (H_{5a})		**Decrease with NE (H_{6a})**	
Markets with extremely weak NE	Negative (H_{5b}) (pioneer disadvantage)	Markets with extremely weak NE	Positive (H_{6b}) (pioneer advantage)
Markets with extremely strong NE	Positive (H_{5c}) (pioneer advantage)	Markets with extremely strong NE	Negative (H_{6c}) (pioneer disadvantage)

Methods

Data and Variables

Srinivasan, Lilien, and Rangaswamy (2004) examine 45 categories affected by NE. Using the historical method (e.g., Golder and Tellis 1993; Sood and Tellis 2005), they identify the pioneer in each selected category from 1950 to 2001. These products range from computer hardware (e.g., mainframe computers, notebook computers, workstations), computer software (e.g., antivirus, database, desktop publishing), and consumer electronics (e.g., home VCRs, DVD players, televisions) to telecommunication equipment (e.g., cordless telephones, fax machines, wireless telephones) and office supplies (e.g., photocopiers, scanners, printers). Our empirical analysis focuses on the same 45 categories. We collect information not only on the pioneer but also on early followers in each selected category from 1950 to 2007.

First, we independently identified pioneers in these 45 product categories. In 42 of the 45 categories, the pioneers we identified are consistent with those in Srinivasan, Lilien, and Rangaswamy's (2004) study.[1] Such a high degree of result consistency suggests strong method validity. Second, using the pioneer in each category as the starting point, we traced forward, on a yearly basis, the news archives, articles published in scholarly journals, company histories, and online databases until we identified the early followers. Following Robinson and Min (2002), when multiple entrants were identified in the same year, we included them all in the database as early followers. Overall, the data set includes 45 pioneers and 55 early followers in 45 categories from 1950 to 2007. We offer a detailed description of market pioneers and early followers in all markets in Web Appendix A (http://www.marketingpower.com/jmjuly10). Next, we define the variables used in the empirical examination.

Survival duration and order of entry. We determined survival durations for pioneers and early followers by the length of time from year of entry to year of exit. Note that Srinivasan, Lilien, and Rangaswamy's (2004) study data collection ends in 2001. For pioneers reported under "exit" in their study, we used that measure of survival duration. For pioneers reported under "survival" in their study, however, we continued to identify their survival status until 2007 (i.e., the end point of the data collection). For the early followers, the starting point is 2007. We then traced backward, on a yearly basis, the news archives, articles published in scholarly journals, company histories, and online databases until we identified each firm's exit year. If a firm was still in the market by 2007, its survival duration constituted the length of time from the year it entered a market to 2007 and is right censored. Overall, among the 45 pioneers and 55 early followers we identified, 18 pioneers and 42 early followers were still in the market in 2007. We used a variable, PIONEER, to measure the order-of-entry effect (PIONEER = 1 for market pioneers, and PIONEER = 0 otherwise).

Product incompatibility. We first conducted extensive research and consulted experts (e.g., engineering professors) on information technology and consumer electronics to identify technical issues of compatibility for each product category. For example, for telecommunications networks (e.g., telephone and cell phone service networks) and office supplies (e.g., modems, fax machines), which are subject to direct NE, compatibility exists when subscribers to one network can communicate or interconnect with another network. For computer hardware and software (e.g., mainframes, notebooks, personal computers, workstations, software), for which indirect NE arise, compatibility exists when two units of hardware can use identical software. For consumer electronics (e.g., televisions, video game consoles, VCRs, CD players, DVD players), for which indirect NE can also occur, products are considered compatible if a complementary good (e.g., television broadcasts, game cartridges, videotapes, CDs, DVDs) can be used by different brands of the same product. For consumer appliances (e.g., toothbrushes, processors) with indirect NE, compatibility implies that a key component of one product can be used interchangeably with other products.

We then used the historical method to determine the two types of (in)compatibility for each firm's product at the time of introduction. We used two dummy variables, CGIC and WGIC, to denote cross-generation and within-generation incompatibility, respectively. Specifically, if a product was incompatible with its previous generation when it was introduced, then CGIC = 1; otherwise, CGIC = 0.[2] We adopted the same previous-generation product that Srinivasan, Lilien, and Rangaswamy (2004) use for each of the 45 product categories. Similarly, if a product was incompatible with other products in its generation when it was introduced, then WGIC = 1; otherwise, WGIC = 0. Of the 45 pioneers' products, 33 were cross-generation incompatible, and 25 were within-generation incompatible. Of the 55 early followers' products, 42 were cross-generation incompatible, and 28 were within-generation incompatible.[3] Table 2 reports the number of products with the two types of incompatibility for pioneers and early followers.

NE measure. We adopted the same measure of NE that Srinivasan, Lilien, and Rangaswamy (2004) use. Specifically, they measure the NE of the pioneer in each of the 45 categories using the sum of two ratings provided by nine academic raters: degree of direct NE and degree of indirect NE. We used the same measure of NE for the pioneer and its followers in the same category. Therefore, as in Srinivasan, Lilien, and Rangaswamy's study, the NE measured in the data set vary from 3.4 (weakest) to 12.1 (strongest).

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[1] The three inconsistent cases are color television, computer-aided design software, and camcorders, for which we found earlier entrants than the pioneers identified by Srinivasan, Lilien and Rangaswamy (2004).

[2] For six product categories without previous generations, we consider these categories conceptually the same as cross-generation incompatible and code CGIC as 1.

[3] Because there could be more than one early follower (i.e., several followers enter in the same year) for a pioneer, the number of incompatible products is higher for followers than for pioneers.

TABLE 2
Product Compatibility Distribution

	Within-Generation Pioneers (N = 45)		Within-Generation Early Followers (N = 55)	
	Incompatible (WGIC)	**Compatible (WGC)**	**Incompatible (WGIC)**	**Compatible (WGC)**
Cross-Generation				
Incompatible (CGIC)	20	13	22	20
Compatible (CGC)	5	7	6	7

Control variables. We first collected all control variables in Srinivasan, Lilien, and Rangaswamy (2004) by following their methodologies. Specifically, to obtain the radicalness measurement for each product (RDC), we asked 18 master's degree students in engineering to rate each product category in two dimensions (each with a scale from 1 to 9): (1) whether a new product incorporates a substantially different core technology relative to the previous-generation product, and (2) whether a new product provides substantially greater customer benefits relative to the previous generation. We then measured the radicalness of a product category by adding together the ratings from these two dimensions. To facilitate the evaluation, we provided students with descriptions of each product category, such as the time of product introduction and the basic features and functions offered at that time.[4] To denote the incumbency status of a firm, we define a dummy variable INCUMB, such that INCUMB = 1 when the firm produces a product that belonged to the previous generation and 0 otherwise. For the firm size variable, if a firm employed at least 100 people at the time of entry, a dummy variable Size = 1; otherwise, Size = 0. We used a categorical technology intensity variable HTECH to classify product categories as high- or low-technology-intensive products according to the percentage of the number of research-and-development (R&D) employees relative to the total number of employees of the firms within a product category at the three-digit Standard Industrial Classification level.[5]

Because the data include not only pioneers but also followers, following Robinson and Min (2002), we include two additional control variables related to firm entry time: (1) lead time, defined as the number of lead years of a pioneer over its early followers, and (2) delay time, defined as the number of years the entry of an early follower was delayed after the pioneer's entry. The average lead time for the 45 pioneers is 4.82 years, and the average delay time for the 55 early followers is 3.13 years. (Note that the average lead time for the pioneers is different from the average delay time for early followers because of their different sample sizes.) We used the natural logarithm of the lead time and delay time in the estimation (Robinson and Min 2002). We also controlled for the effect of product age by adding the natural logarithm of the product introduction year in the estimation. We summarize the definitions of all variables in Table 3.

Model

We use the accelerated failure time (AFT) model (see Cox and Oakes 1984; Kalbfleisch and Prentice 1980) to estimate the impacts of the two types of incompatibility on survival durations in markets with NE. Specifically, we define the survival time as a function of two types of incompatibility and a set of control variables:

$$
\begin{aligned}
(1)\quad \mathrm{Ln}t_i = {} & \beta_0 + \beta_1\mathrm{PIONEER}_i + \beta_2\mathrm{CGIC}_i + \beta_3\mathrm{WGIC}_i \\
& + \beta_4\mathrm{NE}_i + \beta_5\mathrm{NE}_i \times \mathrm{CGIC}_i + \beta_6\mathrm{NE}_i \times \mathrm{WGIC}_i \\
& + \beta_7\mathrm{NE}_i \times \mathrm{PIONEER}_i + \beta_8\mathrm{CGIC}_i \times \mathrm{PIONEER}_i \\
& + \beta_9\mathrm{NE}_i \times \mathrm{CGIC}_i \times \mathrm{PIONEER}_i \\
& + \beta_{10}\mathrm{WGIC}_i \times \mathrm{PIONEER}_i \\
& + \beta_{11}\mathrm{NE}_i \times \mathrm{WGIC}_i \times \mathrm{PIONEER}_i \\
& + \beta_{12-19}\mathrm{CONTROL} + \sigma\varepsilon_i,
\end{aligned}
$$

where t_i denotes the survival duration of firm i. To examine the joint impacts of product compatibility and NE on pioneer survival advantage (H_1 and H_3), we need to test the coefficients of the three-way interaction terms of NE × CGIC × PIONEER, β_9, and NE × WGIC × PIONEER, β_{11}, in Equation 1. To test their joint impact in the two types of markets (H_2 and H_4), we must calculate and test ($\beta_8 + \beta_9$NE) and ($\beta_{10} + \beta_{11}$NE), respectively. Similarly, to test H_5 and H_6, the overall order-of-entry effect or pioneer advantage, we must calculate and test ($\beta_1 + \beta_7$NE + β_8CGIC + β_9NE × CGIC + β_{10}WGIC + β_{11}NE × WGIC). The vector CONTROL includes control variables such as radicalness (RDC_i), incumbency (INCUMB_i), technology intensity (HTECH_i), size (Size_i), product introduction year ($\mathrm{IntroYear}_i$), pioneer lead time (Lead_i), and follower delay time (Delay_i), as well as their squared terms (Lead_i^2 and Delay_i^2). We discussed these variables previously and define them in Table 3. In addition, σ is the hazard function scale parameter. We estimate the AFT survival model (Equation 1) using the maximum likelihood estimation method (see model details in Web Appendix B at http://

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[4] The radicalness measure has an average of 13.9 with a standard deviation of 1.72 for the pioneers and an average of 13.62 with a standard deviation of 1.87 for the early followers, which is close to the mean of 12.8 and standard deviation of 1.4 reported by Srinivasan, Lilien and Rangaswamy (2004).

[5] We also classified HTECH according to the percentage of industrial R&D funds relative to the total of industrial sales (Sarkar et al. 2006). We obtain the annual data on the percentage of industrial R&D funds to the total of industrial sales at the three-digit Standard Industrial Classification level from the Survey of Industrial Research and Development conducted by the National Science Foundation. Both approaches provide a consistent classification of technology-intensive products in the database.

TABLE 3
Variables Definitions

Variable	Definition
PIONEER	1 if the firm is market pioneer and 0 if otherwise.
NE	We adopt Srinivasan, Lilien, and Rangaswamy's (2004) measure: 2 = "extremely weak network effects," and 14 = "extremely strong network effects."
CGIC	1 if a product is incompatible with its previous generation and 0 if otherwise.
WGIC	1 if a product is incompatible with other products in its generation and 0 if otherwise.
INCUMB	1 if the firm also markets a product belonging to the previous generation of products that satisfied same customer needs and 0 if otherwise.
RDC	We adopt Srinivasan, Lilien, and Rangaswamy's (2004) and Chandy and Tellis's (2000) measure and add two dimensions: (1) whether a new technology incorporates a substantially different core technology on a scale from 1 to 9 and (2) whether a new product provides substantially greater customer benefits than the previous product generation in the category on a scale from 1 to 9.
HTECH	It is measured as a categorical variable that classifies product categories as high- or low-technology-intensive products. HTECH = 1 if the product is classified as a high-technology-intensive product, and HTECH = 0 if otherwise.
Size	1 if the number of employers of the firm is equal to or more than 100 and 0 if otherwise.
Lead	For the market pioneers, the natural logarithm of the lead time in years over the early followers and 0 otherwise.
Delay	For the early followers, the natural logarithm of the delay time in years after the pioneer's entry and 0 otherwise.
IntroYear	The natural logarithm of the introduction year.

www.marketingpower.com/jmjuly10). To increase the interpretability of the parameter estimates, we mean-centered continuous variables such as NE, radicalness, lead time, and delay time.

Results

We report the descriptive statistics of all variables in Table 4 and the results of the model estimation in Table 5. As Table 4 shows, for the 45 product categories in the study, the mean survival duration is 17.36 years for pioneers and 22.15 years for early followers ($p < .05$). This suggests that, on average, pioneers experience a survival disadvantage compared with early followers in these markets. As Table 5 shows, the estimation results show an overall goodness of fit ($\chi^2 = 66.30$, $p < .01$).[6] The coefficient of the variable PIONEER is significantly negative ($\beta_1 = -2.079$, $p < .10$), suggesting a negative main effect of entry order on firm survival. The coefficient of variable NE is also significantly negative ($\beta_4 = -1.278$, $p < .10$), suggesting a negative main effect of NE on firm survival. This finding is consistent with that discovered by Srinivasan, Lilien, and Rangaswamy (2004), who only examine pioneer firms.

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[6] Using the same subsample of all pioneers, the model also shows a significantly better fit than that in Srinivasan, Lilien, and Rangaswamy's (2004) study ($\chi^2 = 8.36$, d.f. = 2, $p < .05$). In addition, the coefficients are significant for all product compatibility–related variables, which shows the importance of incorporating product compatibility in the study.

TABLE 4
Descriptive Statistics

	Pioneer (N = 45)		Early Follower (N = 55)	
Variable	M	SD	M	SD
Survival duration (years)	17.36	13.23	22.15	13.70
NE	7.67	2.23	7.97	2.15
CGIC	.73	.45	.76	.43
WGIC	.56	.50	.51	.51
RDC	13.90	1.72	13.62	1.87
HTECH	.73	.45	.69	.47
INCUMB	.42	.50	.49	.50
Size	.60	.50	.82	.39
IntroYear	7.59	.01	7.59	.01
Delay	4.82	9.04	3.13	3.32

TABLE 5
Empirical Results of Survival Duration in Markets with NE

Variable	Estimate	SE	Hypothesized Effects
Intercept (β_0)	3.263**	1.625	
PIONEER (β_1)	–2.079*	1.555	
CGIC (β_2)	–1.919	1.505	
WGIC (β_3)	1.617*	1.051	
NE (β_4)	–1.278*	.841	
NE × CGIC (β_5)	1.395**	.794	
NE × WGIC (β_6)	–.796*	.482	
NE × PIONEER (β_7)	1.292*	.854	
CGIC × PIONEER (β_8)	2.685**	1.551	
NE × CGIC × PIONEER (β_9)	–1.548**	.821	– (H_1)
WGIC × PIONEER (β_{10})	–2.253**	1.156	
NE × WGIC × PIONEER (β_{11})	.878**	.520	+ (H_3)
Control Variables			
RDC (β_{12})	.187	.123	
INCUMB (β_{13})	.488	.490	
HTECH (β_{14})	–.066	.636	
Size (β_{15})	1.293***	.464	
IntroYear (β_{16})	67.778*	43.963	
Lead (β_{17})	–.530	.616	
Lead × lead (β_{18})	.606*	.377	
Delay (β_{19})	–.993	.800	
Delay × delay (β_{20})	2.471**	1.056	
Scale parameter	.945		
Log-likelihood value	–86.093		
Goodness of fit (d.f. = 19)	χ^2 = 66.30***		
Sample size	N = 100		

*$p < .10$.
**$p < .05$.
***$p < .01$.

In the following discussion, we first present two new key results of the model: (1) the impacts of the two types of product incompatibility on pioneer survival advantage (H_1–H_4) and (2) the overall order-of-entry effects (H_5–H_6). We then discuss the robustness of the results.

Impacts of Product Incompatibility

H_1 and H_3 predict that NE influence the impact of the two types of product (in)compatibility on pioneer survival advantage in opposite directions: They decrease the impact of cross-generation incompatibility (H_1), but they increase the impact of within-generation incompatibility (H_3). As Table 5 shows, the coefficient of NE × CGIC × PIONEER is significantly negative ($\beta_9 = -1.548$, $p < .05$), but the coefficient of NE × WGIC × PIONEER is significantly positive ($\beta_{11} = .878$, $p < .05$). These results suggest that as NE increase, the impact of cross-generation incompatibility on pioneer survival advantage becomes weaker, whereas the impact of within-generation incompatibility becomes stronger. Thus, H_1 and H_3 are supported.

H_2 predicts that the impact of cross-generation incompatibility is positive on pioneer survival advantage in markets with extremely weak NE (H_{2a}) but negative in markets with strong NE (H_{2b}). To test these predictions, we rewrite the sum of factors with CGIC × PIONEER in Equation 1 as K_{cross} × CGIC × PIONEER, where $K_{cross} = \beta_8 + \beta_9 NE$. The coefficient K_{cross} represents the net impact of cross-generation incompatibility on pioneer survival advantage at each level of the NE. As Panel A of Table 6 shows, in markets with the lowest level of NE (NE = –6), the coefficient K_{cross} is significantly positive ($K_{cross} = 11.974 > 0$, $p < .05$), in support of H_{2a}.[7] Conversely, in markets with the highest level of NE (NE = 6), the coefficient K_{cross} is significantly negative ($K_{cross} = -6.605$, $p < .05$), in support of H_{2b}.

H_4 predicts that the impact of within-generation incompatibility is negative on pioneer survival advantage in markets with extremely weak NE (H_{4a}) but positive in markets with strong NE (H_{4b}). To test these predictions, we rewrite the sum of factors with WGIC × PIONEER in Equation 1 as K_{within} × WGIC × PIONEER, where $K_{within} = \beta_{10} + \beta_{11} NE$. The coefficient K_{within} represents the net impact of within-generation incompatibility on product pioneer advantage at each level of NE. As Panel A of Table 6 shows, in markets with the lowest level of NE (NE = –6), the coefficient K_{within} is significantly negative ($K_{within} = -7.518$, $p < .05$), in support of H_{4a}. Conversely, in markets with the highest level of NE (NE = 6), the coefficient K_{within} is positive ($K_{within} = 3.013$, $p < .10$), in support of H_{4b}.

Overall Order-of-Entry Effects

To test the overall order-of-entry effects, we rewrite the sum of factors with PIONEER in Equation 1 as $\Omega_{overall}$ × PIONEER, where $\Omega_{overall} = \beta_1 + \beta_7 NE + \beta_8 CGIC + \beta_9 NE \times CGIC + \beta_{10} WGIC + \beta_{11} NE \times WGIC$. The coefficient $\Omega_{overall}$ represents the overall order-of-entry effects on survival under different product compatibility conditions. Accordingly, a coefficient $\gamma_{overall}$ represents how the overall order-of-entry effect changes with the strength of NE, where $\gamma_{overall} = \partial\Omega_{overall}/\partial NE = \beta_7 + \beta_9 CGIC + \beta_{11} WGIC$. Panel B of Table 6 presents the results on the overall order-of-entry effects under different combinations of the two types of product compatibility. As Panel B of Table 6 shows, when products are cross-generation compatible but within-generation incompatible (CGC/WGIC), the pioneer survival advantage significantly increases with the strength of NE ($\gamma_{overall} = \beta_7 + \beta_{11} WGIC = 2.170$, $p < .01$), in support of H_{5a}. Furthermore, the overall order-of-entry effect is significantly negative ($\Omega_{overall} = -17.349$, $p < .01$) in markets with the lowest level of NE (NE = –6) but significantly positive ($\Omega_{overall} = 8.684$, $p < .05$) in markets with the highest level of NE (NE = 6). Thus, the results support H_{5b} and H_{5c}.

In contrast, when products are cross-generation compatible but within-generation incompatible (CGIC/WGC), as Panel B of Table 6 shows, the pioneer survival advantage significantly decreases with the strength of NE ($\gamma_{overall} = \beta_7 + \beta_9 CGIC = -.961$, $p < .01$), in support of H_{6a}. In markets with the lowest level of NE (NE = –6), the overall order-of-

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[7] The original measure of NE is continuous between [2, 14] with an average of 8. Thus, the mean-centered measure is continuous between [–6, 6].

TABLE 6
Hypotheses Test Results

A: Impacts of Product Compatibility

	Estimate	Hypothesized Effects
Cross-Generation Incompatibility		
β_9	−1.548** (.821)	− (H_1)
K_{cross}		
NE = −6	11.974** (6.191)	+ (H_{2a})
NE = 6	−6.605** (3.871)	− (H_{2b})
Within-Generation Incompatibility		
β_{11}	.878** (.520)	+ (H_3)
K_{within}		
NE = −6	−7.518** (3.893)	− (H_{4a})
NE = 6	3.013* (2.636)	+ (H_{4b})

B: Overall Order-of-Entry Effects

	Estimate	Hypothesized Effects
Cross-Generation Compatible/ Within-Generation Incompatible		
$\gamma_{overall}$	2.170*** (.896)	+ (H_{5a})
$\Omega_{overall}$		
NE = −6	−17.349*** (6.757)	− (H_{5b})
NE = 6	8.684** (4.240)	+ (H_{5c})
Cross-Generation Incompatible/ Within-Generation Compatible		
$\gamma_{overall}$	−.961*** (.288)	− (H_{6a})
$\Omega_{overall}$		
NE = −6	2.144* (1.721)	+ (H_{6b})
NE = 6	−.934 (2.036)	− (H_{6c})

*$p < .10$.
**$p < .05$.
***$p < .01$.
Notes: Sample size: N = 100. NE is a mean-centered continuous variable. The mean value is 8. Numbers in parentheses are estimated standard errors. Parameters β_9, β_{11}, K_{cross}, $K_{withing}$, $\gamma_{overall}$, and $\Omega_{overall}$ are based on Model 1 and estimates in Table 5; the dependent variable is the survival duration.

entry effect is significantly positive ($\Omega_{overall} = 2.144$, $p < .10$), in support of H_{6b}. Finally, the overall order-of-entry effect has the predicted negative sign but is not significant ($\Omega_{overall} = -.934$, $p > .10$) in markets with the highest level of NE (NE = 6).

Robustness and Validity of Results

We examine the sensitivity and validity of the estimations with several additional analyses. First, instead of assuming the Weibull baseline distribution, as in Equation 1, we estimate the AFT model by assuming two other commonly used baseline distributions: lognormal and log-logistic distributions. Based on these two alternative assumptions (see the estimation results in the second and third columns of Web Appendix C at http://www.marketingpower.com/jmjuly10), the results are consistent with those in Table 5. Second, in addition to using the AFT model, we estimate a proportional hazard model (e.g., Cox and Oakes 1984; Kalbfleisch and Prentice 1980). The signs of the estimates in the proportional hazard model are opposite to those in the AFT model because the former assumes the impacts of variables on the hazard rate while the latter assumes the impacts of variables on the time to survive. The two models lead to the same patterns as in Table 5 (see the results in the fourth column of Web Appendix C). Third, we estimated a frailty model (e.g., Xue and Brookmeyer 1996) to determine whether the hazard rates of pioneers and followers are correlated. The results show that the correlated hazard parameter is not significant (see the results in the fifth column of Web Appendix C). This suggests that estimating the impacts of product compatibility on the survival duration of pioneers and followers in a single hazard model is valid in the data.

Finally, we apply jackknife cross-validation methods to show the predictive validity of the model (Hinkley 1983). Specifically, we hold out one observation each time and reestimate the remaining sample. We then use the estimated parameters to predict the median survival time for the holdout product and calculate the 95% prediction interval. The prediction accuracy rate is assessed by whether the observed survival time for the holdout product falls in the prediction interval (e.g., Claret et al. 2009). Compared with the baseline model (i.e., the AFT model without all covariates in Equation 1), our model improves the prediction accuracy rate from 46% to 87%.[8]

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[8] We also compared the prediction accuracy rate with Srinivasan, Lilien, and Rangaswamy's (2004) model, using the same subsample of all pioneers. Our model improves the prediction accuracy rate from 80% to 84%.

General Discussion

Research Contributions

This research contributes to the NE literature by taking the first step toward directly testing how the order of market entry (i.e., pioneers versus early followers) and product compatibility may affect firm survival duration in NE markets. We show that in NE markets, the two types of product compatibility, cross- and within-generation compatibility, affect pioneer survival advantage in different ways. We also find that both the magnitude and the direction of these impacts are contingent on the strength of NE. This research makes a conceptual contribution by proposing some systematic patterns within these complicated contingency relationships. To our knowledge, this is the first study to provide empirical evidence as to how pioneers can have a survival advantage over their early followers in markets with NE and under different compatibility conditions.

This research also contributes to the order-of-entry literature by explicitly comparing the survival duration of pioneers with that of early followers. We show that pioneers have a lower average survival duration than early followers (17 versus 22 years; see Table 4). The survival analysis further shows that the ultimate effects of order of entry and pioneer advantage are jointly determined by two important market characteristics: the relative strength of NE and product compatibility. The growing importance of NE throughout the economy makes this a significant finding.

Managerial Implications

The installed-user-base effect, a unique characteristic of markets with NE, is a double-edged sword for a market pioneer's survival: While it imposes a high first-mover risk because of the unique start-up difficulty (zero or small installed base at product launch), it also provides a high first-mover benefit because the established installed base creates entry barriers and competitive advantages. To be successful in markets with NE, managers need a deeper understanding of the overall impact of NE on survival as well as the impact of more specific product–market factors. The findings provide useful managerial implications for firms in these markets. To illustrate some specific managerial insights, using the estimated parameters based on the data of 45 product categories in this study, we simulate the survival probabilities for both pioneers and followers under different product compatibility conditions and with varying degrees of NE strength. Specifically, we simulate survival rates for both pioneers and followers, given the model (Equation 1) and the estimated parameters in Table 5, under four market conditions in terms of the two types of product compatibility:

1. Both incompatible (CGIC/WGIC).
2. Both compatible (CGC/WGC).
3. Cross-generation incompatible but within-generation compatible (CGIC/WGC).
4. Cross-generation compatible but within-generation incompatible (CGC/WGIC).

For each case, we vary the strength of NE while keeping the control variables at average values across all product categories in the data set. We present the simulated survival probabilities at the fifth year from the time of market entry in Figure 2, Panel A (pioneers) and Panel B (followers), respectively.[9] We also present some comparisons of pioneers and followers in Figure 2, Panels C and D. These figures illustrate how crucial it is for firms in markets with NE to understand the three factors that jointly affect their survival: (1) product compatibility, (2) strength of NE, and (3) order of entry.

We offer the following specific managerial insights: First, it is important for firms to understand that NE is *not* necessarily a threat to the survival of pioneers. As Figure 2, Panel A, shows, with a cross-generation compatible but within-generation incompatible product, pioneers achieve higher survival probability with a higher level of NE. This suggests that innovating firms facing strong NE should not hesitate to be the first to enter the market simply because of the high risk in such markets. The consideration of the impact of NE on pioneers' survival must be compatibility specific.

Second, it is important to understand that in the presence of NE, the conditions facilitating pioneers' survival do not necessarily favor later entrants' survival. For example, in the presence of strong NE, it is the best survival condition for pioneers (see Figure 2, Panel A) but the worst survival condition for followers (see Figure 2, Panel B) when a product is cross-generation compatible but within-generation incompatible. This finding suggests that it is not always in later entrants' best interest to follow the same product compatibility choices of the market pioneers, even if those choices have been successfully accepted by the market.

Third, although on average pioneers have a higher failure rate than early followers in NE markets, opportunities exist for pioneers to enjoy a survival advantage. Indeed, market pioneers can have a survival advantage in markets with both strong and weak NE, but under different compatibility conditions. As Figure 2, Panel C, shows, in markets with weak NE, firms can have a pioneer advantage if their products are compatible with those of their competitors but not with those of the previous generation. However, as Figure 2, Panel D, shows, in markets with strong NE, firms can gain a pioneer advantage when their products are compatible with the previous-generation products, even if they are not compatible with those of their followers.

The loss of CBS color television to RCA color television highlights the importance of being compatible with previous-generation products (B&W televisions) in strong NE markets. In contrast, cross-generation incompatibility has helped Logitech gain a pioneer advantage in the digital camera market, in which the strength of NE is relatively low because consumers can share their photos easily through common file formats (e.g., JPEG). The digital camera, first commercialized by Logitech in 1991, does not allow consumers to use film and thus is cross-generation incompatible with traditional cameras. However, it allows consumers to

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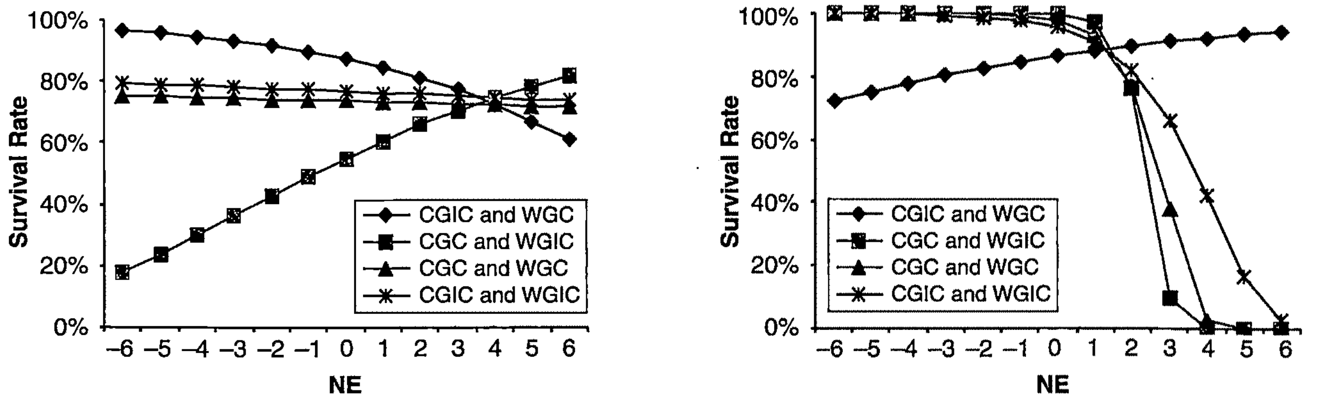
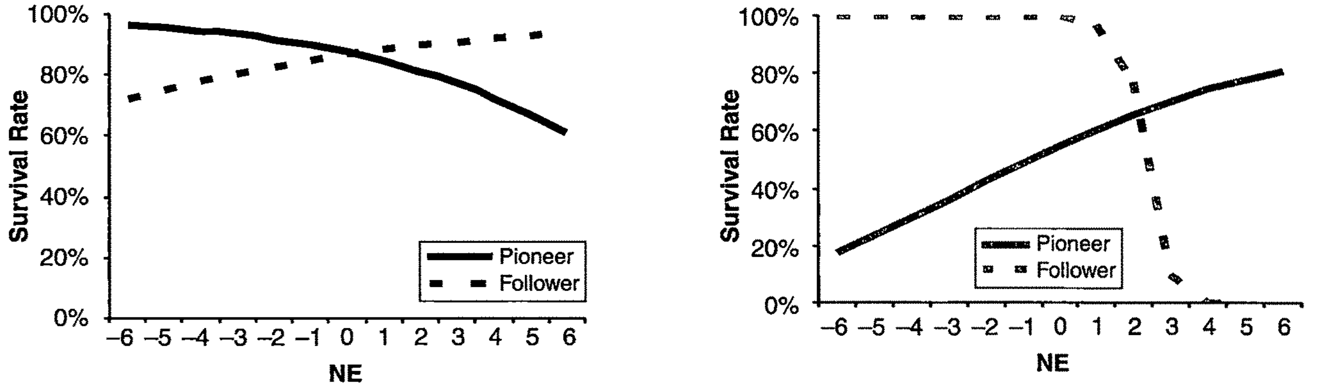
[9] We find a similar pattern for the ten-year survival rates.

FIGURE 2
Simulated Survival Rates for Pioneers and Followers Under Four Different Compatibility Conditions



A: Five-Year Survival Rate of Pioneers Under Four Compatibility Conditions

B: Five-Year Survival Rate of Followers Under Four Compatibility Conditions



C: Five-Year Survival Rate When the Product Is CGC and WGC

D: Five-Year Survival Rate When the Product Is CGIC and WGIC

Notes: NE is mean centered. The mean value is 8. Sample size: N = 100. The survival rates for pioneers and followers under different conditions are simulated on the basis of Model 1 and the estimated parameters.

take, store, edit, and transfer photos in a new and convenient way. The significant product differentiation resulting from cross-generation incompatibility has helped Logitech redefine consumers' preferences in the digital and online image market. Meanwhile, because of the relative weak NE, such incompatibility does not have a major negative impact on consumers' adoption risk. As a result, the positive consumer preference effect dominates the negative market uncertainty effect, and thus Logitech has gained a pioneer survival advantage in this market.

Fourth, firms in NE markets can also gain some new insights into their entry decisions. As Figure 2, Panel B, shows, in markets with strong NE, the market follower has a significantly higher survival rate when its products are cross-generation incompatible and within-generation compatible than under the other three product compatibility conditions. This finding suggests that it is important for a potential later entrant to consider product compatibility conditions when deciding whether to enter a new market with strong NE. Specifically, if survival is the most important consideration, later entrants should consider entering the market only if there are few barriers for them to achieve within-generation compatibility with pioneers.

Finally, the findings provide useful insights into a firm's product decision making. Often, product compatibility is achieved as a result of a technology revolution or by industry negotiation and government intervention. However, for some products, firms have leverage on their compatibility. The results suggest that the two types of product compatibility should be treated differently. Specifically, cross-generation incompatibility can cause pioneers to lose market leadership in markets with strong NE: CBS lost its market leadership because of its cross-generation incompatibility with B&W televisions; however, RCA, the later entrant, overcame CBS's pioneer advantage by making its color television compatible with the older-generation B&W televisions. In contrast, within-generation incompatibility can help market pioneers deter potential entry (e.g., IBM's decision not to introduce its 4-inch FDD in light of the success of Sony's 3.5 FDD) and sustain their first-mover advantage in those markets. Caution should be exercised, however, when drawing managerial implications on firms' product decisions based on within-generation compatibility: Sometimes, the status of such compatibility may not be known to the pioneers at the time of entry, or firms may lack the ability to determine it.

Limitations and Directions for Further Research

This research has several limitations. First, as in other studies using historical methods, the data set only includes products that we could find in historical records, and products that have existed in markets for a short time may not be identifiable because of missing archival records. Second, in line with Srinivasan, Lilien, and Rangaswamy's (2004) study, we use subjective measures for NE. If future studies were to use objective measures, they could provide additional insights into this issue. Third, this research focuses only on the survival duration of a product. In practice, firms may have other objectives in different markets or at different times. Further research could explicitly examine how NE and product compatibility jointly affect firms' performance in other areas.

Furthermore, the results illustrate the differential impacts of the two types of incompatibility on pioneers' survival advantages. A potentially important area of further research would be exploring how the effectiveness of firms' marketing strategies might be affected differently by the two types of compatibility. For example, preannouncement of new products is a widely adopted practice. The incentives for preannouncement are stronger in NE markets because they may motivate consumers to delay their purchases and slow the buildup of the installed base of incompatible technologies. However, they may also motivate the existing adopters of competing technology to join the standards war, especially given advances in information technology and the fast growth of social networking (e.g., various anti-DivX Web sites launched by consumers soon after the product announcement by Circuit City). It would be worthwhile to examine whether preannouncement affects the innovating firm differently under the two types of incompatibility.

Finally, this work focuses on how order-of-entry effects are contingent on product compatibility in NE markets. Further research might explore how other potentially significant contingent factors influence pioneers and followers in these markets.

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Young Jee Han, Joseph C. Nunes, & Xavier Drèze

Signaling Status with Luxury Goods: The Role of Brand Prominence

This research introduces "brand prominence," a construct reflecting the conspicuousness of a brand's mark or logo on a product. The authors propose a taxonomy that assigns consumers to one of four groups according to their wealth and need for status, and they demonstrate how each group's preference for conspicuously or inconspicuously branded luxury goods corresponds predictably with their desire to associate or dissociate with members of their own and other groups. Wealthy consumers low in need for status want to associate with their own kind and pay a premium for quiet goods only they can recognize. Wealthy consumers high in need for status use loud luxury goods to signal to the less affluent that they are not one of them. Those who are high in need for status but cannot afford true luxury use loud counterfeits to emulate those they recognize to be wealthy. Field experiments along with analysis of market data (including counterfeits) support the proposed model of status signaling using brand prominence.

Keywords: luxury, status, conspicuous consumption, brand prominence, branding, reference groups, associative/dissociative motives, counterfeit goods

> The basis on which good repute in any highly organized industrial community ultimately rests is pecuniary strength; and the means of showing pecuniary strength, and so of gaining or retaining a good name, are leisure and a conspicuous consumption of goods.
>
> —Thorstein Veblen, *The Theory of the Leisure Class* (1899, p. 51)

In the middle ages, sumptuary laws specified in minute detail what each social class was permitted and forbidden to wear, including the maximum price an article of clothing could cost. For example, grooms could not wear cloth that exceeded two marks, and knights could wear apparel up to six marks' value but were forbidden from wearing gold, ermine, or jeweled embroidery (Berry 1994). The rationale was to reserve particular fabrics and ornamentation for certain social classes to distinguish them and uphold order within the social hierarchy. A case in point was the extravagant wardrobe of Elizabeth I (1533–1603), which provided visible proof of her divinity and signaled her special place in society (McKendrick, Brewer, and Plumb 1983, p. 76). By the eighteenth century, a blurring of partitions in social classes led to the demise of all sumptuary laws (Berry 1994, p. 82); yet the use of personal effects as markers of status persists.

Today, anyone can own a purse, a watch, or a pair of shoes, but specific brands of purses, watches, and shoes are a distinguishing feature for certain classes of consumers. A woman who sports a Gucci "new britt" hobo bag ($695) signals something much different about her social standing than a woman carrying a Coach "ali signature" hobo ($268). The brand, displayed prominently on both, says it all. Coach, known for introducing "accessible luxury" to the masses, does not compare in most people's minds in price and prestige with Italian fashion house Gucci. But what inferences are made regarding a woman seen carrying a Bottega Veneta hobo bag ($2,450)? Bottega Veneta's explicit "no logo" strategy (bags have the brand badge on the inside) makes the purse unrecognizable to the casual observer and identifiable only to those "in the know."

It is not uncommon for brands to mark their products differently to be more or less visible. For example, Volvo wanted its newly introduced XC60 crossover "to be recognizable as a Volvo from twice the normal distance of 300 feet, so [the firm] added a larger insignia" (Vella 2008, p. 17) (see Figure 1). We introduce a new construct, "brand prominence," to reflect this variation in conspicuousness. We define brand prominence as the extent to which a product has visible markings that help ensure observers recognize the brand. Manufacturers can produce a product with "loud" or conspicuous branding or tone it down to "quiet" or discreet branding to appeal to different types of consumers. Compare the Gucci sunglasses in Figure 2. The first literally spells out the Gucci brand, while the second is far less explicit, using only the brand's subtle but distinctive bamboo hinges.

This research identifies the types of consumers who prefer loud versus quiet products and offers an explanation for these differences. Although a great deal of research exists on the critical elements constituting a brand, from symbols

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FIGURE 1
Volvo XC60 and Volvo XC90

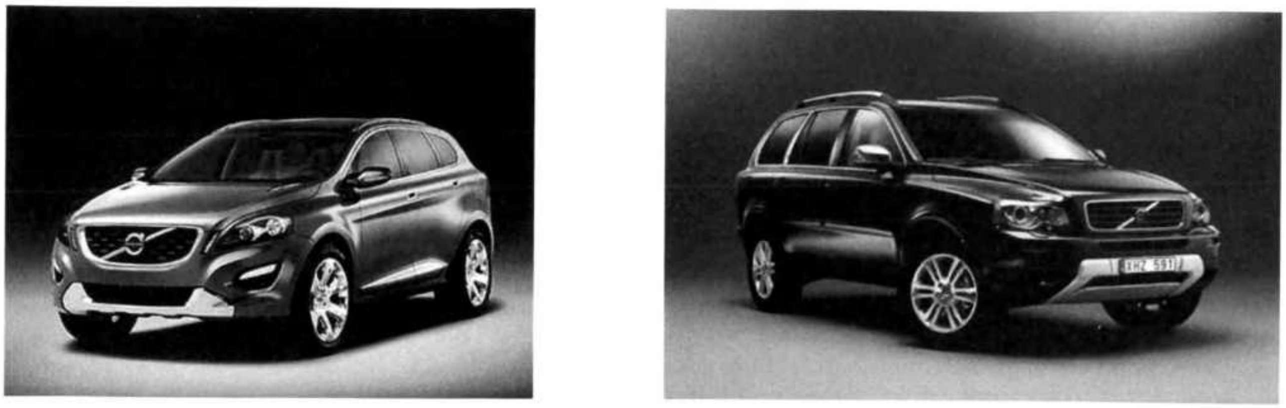
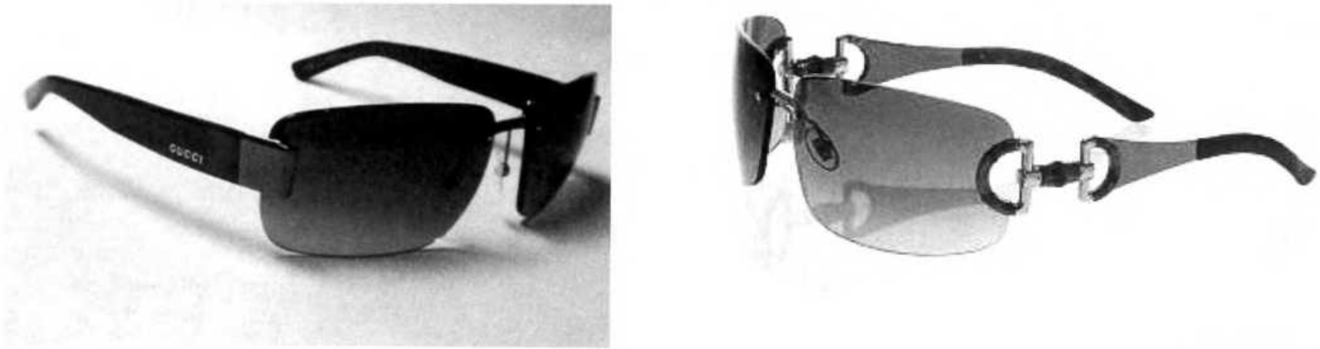


FIGURE 2
Loud and Quiet Gucci Sunglasses



and slogans (Aaker 1992) to the distinctiveness of a brand's physique (Kapferer 1992), little work (of which we are aware) has examined the prominence of a brand's identifying marks on the product. An exception is Wilcox, Kim, and Sen (2009), who find that products without logos are less apt to serve the social functions of self-expression and self-presentation. The construct of brand prominence clarifies how the relative conspicuousness of a brand's mark or logo reflects different signaling intentions of the owner. In short, different consumers prefer quiet versus loud branding because they want to associate themselves with and/or dissociate themselves from different groups of consumers.

We begin by proposing a taxonomy that assigns consumers to one of four groups on the basis of two distinct and measurable characteristics: wealth and need for status. According to the Pew Center for Research (Allen and Dimock 2007), almost half of all Americans view their country as being divided into two classes: the haves and the have-nots. Thus, first we divide consumers into the relatively well-to-do and everyone else. Dubois and Duquesne (1993) find that the higher a person's income, the greater is that person's propensity to purchase luxury goods; thus, luxury goods manufacturers are most concerned with how preferences vary among those who have more.

Second, luxury goods are traditionally defined as goods such that the mere use or display of a particular branded product brings the owner prestige apart from any functional utility (Grossman and Shapiro 1988). Therefore, we account for individual differences in consumption-related need for status, defined as a "tendency to purchase goods and services for the status or social prestige value that they confer on their owners" (Eastman, Goldsmith, and Flynn 1999, p. 41). As such, we further divide consumers according to the extent to which they seek to gain prestige by consuming luxury goods. In summary, the taxonomy divides consumers into four groups according to their financial means and the degree to which status consumption is a motivating force in their behavior.

An essential insight that emerges from the taxonomy is how the four groups differ with respect to whom they seek to associate with or dissociate from, which corresponds predictably to their preferences for conspicuously or inconspicuously branded luxury goods. Consumers often choose brands as a result of their desire to associate with or resemble the typical brand user (Escalas and Bettman 2003, 2005). Furthermore, self-presentation concerns lead consumers to avoid choosing a product associated with a dissociative reference group (White and Dahl 2006, 2007). Associative and dissociative motives are not necessarily opposite sides of the same coin; a desire to associate with one group does not imply a desire to dissociate from opposing groups. For example, a Harley-Davidson Riders Club member need not abhor Suzuki or Kawasaki motorcycles or want to distance him- or herself from their owners. We proceed by labeling each of the four classes of consumers created by the taxonomy and describing their signaling motives on the basis of their desire to associate with and/or dissociate from their own and the other three groups.

For mnemonic reasons, we label the four groups as the four Ps of luxury: patricians, parvenus, poseurs, and proletarians. We label the first category "patricians," after the elites in ancient Roman times. Patricians possess significant wealth and pay a premium for inconspicuously branded products that serve as a *horizontal* signal to other patricians. Feltovich, Harbaugh, and To (2002) use game theory to argue that "high types" (i.e., those who are high in wealth, productivity, or some other valued attribute) sometimes avoid obvious signals that should separate them from low types because they are concerned with separating themselves from medium types who use such signals. In our model, however, patricians are principally concerned with associating with other patricians rather than dissociating themselves from other classes of consumers. They use subtle signals because only other patricians can interpret them, a byproduct of which is that they avoid being misconstrued as someone who uses luxury brands to differentiate themselves from the masses. In summary, patricians are high in financial means, low in their need to consume for prestige's sake, and keen to associate with other patricians.

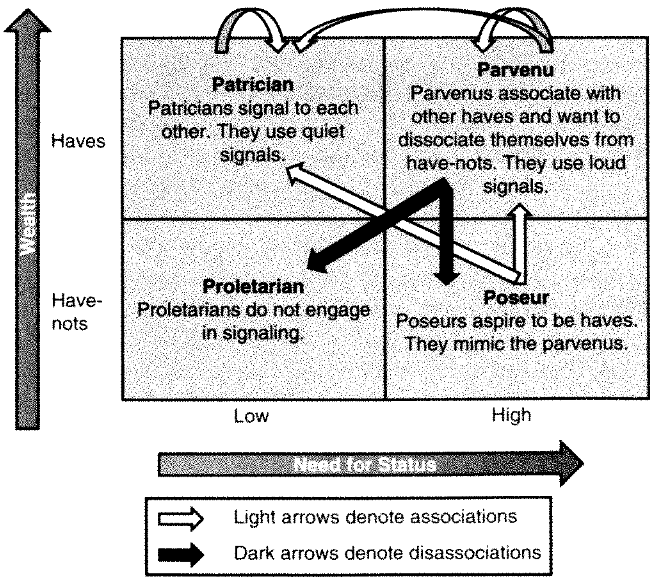
We label the second category "parvenus" (from the Latin *perveniō*, meaning "arrive" or "reach"). Parvenus possess significant wealth but not the connoisseurship necessary to interpret subtle signals, an element of which Bourdieu (1984) refers to as the "cultural capital" typically associated with their station. To parvenus, Louis Vuitton's distinctive "LV" monogram or the popular Damier canvas pattern is synonymous with luxury because these markings make it transparent that the handbag is beyond the reach of those below them. However, they are unlikely to recognize the subtle details of a Hermès bag or Vacheron Constantin watch or know their respective prices. Parvenus are affluent—it is not that they cannot afford quieter goods—but they crave status. They are concerned first and foremost with separating or dissociating themselves from the have-nots while associating themselves with other haves, both patricians and other parvenus.

We call the third class of consumers "poseurs," from the French word for a "person who pretends to be what he or she is not." Like the parvenus, they are highly motivated to consume for the sake of status. However, poseurs do not possess the financial means to readily afford authentic luxury goods. Yet they want to associate themselves with those they observe and recognize as having the financial means (the parvenus) and dissociate themselves from other less affluent people. Thus, they are especially prone to buying counterfeit luxury goods. If brand status is important to a person, as it is with poseurs, but is unattainable, a person is likely to turn to counterfeit products as cheap substitutes for the originals (Wee, Tan, and Cheok 1995). This implies, and we subsequently show, that fake handbags should disproportionately be copies of luxury handbags that are conspicuous or loud in displaying the brand—the kinds of goods the parvenus favor—but because of their discounted price are especially appealing to poseurs.

We label the fourth class of consumer "proletarians," a term commonly used to identify those from a lower social or economic class, though we use it more narrowly to distinguish less affluent consumers who are also less status conscious. For the purposes of this study, proletarians are simply not driven to consume for the sake of status and either cannot or will not concern themselves with signaling by using status goods. They seek neither to associate with the upper crust nor to dissociate themselves from others of similarly humble means and neither favor nor spurn loud luxury. Figure 3 provides a pictorial representation of the complete framework.

We organize the remainder of this article follows: First, we briefly summarize the relevant literature on status goods, signaling, and branding. In Study 1, the analysis of market data reveals that, on average, inconspicuously branded luxury goods cost more than the same manufacturer's goods with more conspicuous branding. This is consistent with patricians paying a premium for understatement. In Study 2, we use market data again to show that counterfeiters tend to copy the lower-priced, louder, luxury variants within the product line of the brands they knock off, which appeal to poseurs seeking to emulate parvenus. Study 3 is a field study; it demonstrates that only patricians can read subtle brand cues correctly. Together with Study 1, Study 3 shows that patricians pay a premium for signals that only other patricians can decipher. Study 4 shows that preferences between loud and quiet luxury goods differ predictably among the four groups, corresponding to their social motives (i.e., the people each group wants to associ-

FIGURE 3
Signal Preference and Taxonomy Based on Wealth and Need for Status


Wealth
Haves
Have-nots
Patrician
Patricians signal to each other. They use quiet signals.
Parvenu
Parvenus associate with other haves and want to dissociate themselves from have-nots. They use loud signals.
Proletarian
Proletarians do not engage in signaling.
Poseur
Poseurs aspire to be haves. They mimic the parvenus.
Low
High
Need for Status
Light arrows denote associations
Dark arrows denote disassociations

ate themselves with and disassociate themselves from). Furthermore, when provided the opportunity, poseurs tend to be far more likely than parvenus to buy counterfeits, the loud bags that appeal to these two groups. We conclude by discussing implications for managers and suggesting avenues for further research.

Status, Signaling, and Branding

Status has its roots in ancient society, in which every person had a "place" in the social hierarchy. Historically, this place was attained either through birth (e.g., born into nobility or an upper class in the caste system) or by ordainment (e.g., knighted by the king). This changed during the Age of Enlightenment (roughly the beginning of the eighteenth century) as a person's worth began to be judged according to his or her achievements, which frequently brought great wealth (De Botton 2004). A reliable connection was made between merit and worldly success; well-paid jobs were secured primarily through intelligence and ability. The rich were not just wealthier; they were "better." They merited their success, and as such, affluence increasingly became a marker of social status. Wealth and social status have been inextricably linked ever since.

In his classic treatise *The Theory of the Leisure Class* (1899), economist and sociologist Thorstein Veblen argues that the accumulation of wealth is not really what confers status. Rather, what confers status is the evidence of wealth, which requires its wasteful exhibition—behavior he describes as "conspicuous consumption." As examples, Veblen notes that the leisure class used silverware, hand-painted china, and high-priced table linens at meals when less expensive substitutes could work as well or better. Members of this class bought fine silverware not to convey food into their mouths but to display that they could afford such things. Veblen notes that the examples he put forth, including manicured lawns, the latest fashions, and exotic dog breeds, confer prestige to owners because of the items' lofty price tags.

Contemporary research in marketing recognizes the symbolic role of possessions in consumers' lives (Belk 1988; Levy 1959; Solomon 1983). It is widely accepted that people make inferences about others on the basis of their possessions (Belk, Bahn, and Mayer 1982; Burroughs, Drews, and Hallman 1991; Richins 1994a, b). Furthermore, Richins (1994a) points out that those inferences can reflect others' success, measured by the things someone owns. The objects that symbolize success tend to be high priced in absolute terms or expensive relative to the average cost of items in the product category (see also Fournier and Richins 1991). Charles, Hurst, and Roussanov (2007) argue that status goods surface in highly visible categories in which greater expenditures are generally associated with higher income, such as cars (e.g., Bentley), fashion (e.g., Dior), and jewelry (e.g., Tiffany & Co.).

Marketers understand that a common way to add "snob appeal" to an otherwise pedestrian product is to attach a high price (Eastman, Goldsmith, and Flynn 1999; O'Cass and Frost 2002). Consumers will pay a higher price for a functionally equivalent good because they crave the status brought about by such material displays of wealth (Bagwell and Bernheim 1996). In some ways, higher prices themselves make consumers feel superior as one of the few who can afford to buy the product (Garfein 1989). In this research, we take the view that a product's or brand's potential to signal status through the use of a luxury good depends in large part on the observer's ability to decipher the signal correctly, which, as we demonstrate in Study 3, equates to assessing the relative price of the good with some degree of accuracy.

Although price connotes status, price itself does not determine the desirability of a status brand. Brand choice can send meaningful social signals to other consumers about the type of person using that brand (Wernerfelt 1990). The symbolic meaning consumers derive from a particular brand is often based on associations between the brand and its users or the "type" of consumer who buys that brand (Muniz and O'Guinn 2001). Consumers are influenced by their own group (Bearden and Etzel 1982; Whittler and Spira 2002), those they aspire to be like (Escalas and Bettman 2003, 2005), and those with whom they want to avoid being associated (White and Dahl 2006, 2007). In other words, who uses a brand is integral to the brand image and helps explain why consumers are attracted to certain brands and shy away from others (Sirgy 1982).

The relationship between parvenus and poseurs reflects Veblen's (1899) classic argument that members of a higher class consume conspicuous goods to dissociate themselves from the lower class ("invidious comparison"), while members of the lower class consume conspicuously to associate themselves with and be perceived as a member of the higher class ("pecuniary emulation"). Poseurs favor loud signals to mimic parvenus; they may stretch to buy a loud good, but in contrast to parvenus, they are prone to buy fake luxury goods. We suggest that there is a group of haves who are less concerned with dissociation and more concerned with associating with their own kind. They are the patricians, who pay a premium for subtly branded products only other patricians recognize. We test this indirectly in Study 1 by offering empirical support for the notion that, on average, less conspicuously branded luxury goods offered by the same brand cost more.

Study 1: The Relationship Between Brand Prominence and Price

In Study 1, we examine the relationship between price and brand prominence for three categories of luxury goods: designer handbags, luxury cars, and men's shoes. We focus first on designer handbags. We chose this category in part because "handbags are the engine that drives luxury brands today" (Thomas 2007, p. 168). Handbags had estimated sales of $7 billion in the United States alone in 2007 (Wilson 2007), with the average American woman purchasing four handbags per year (Thomas 2007). In addition, purses do not require sizing, as do shoes or prêt-à-porter (ready-to-wear fashion). The absence of sizes suggests that women have far more choices, and consequently handbags are a category in which manufacturers carry a large number of stockkeeping units. For example, at any given time, Louis

Vuitton (hereinafter we use LV) typically offers more than 200 different handbags but fewer than 20 different pairs of men's shoes. Thus, we focus the analysis on the handbag category but replicate the results using data in the men's shoe market (LV) and the car market (Mercedes-Benz), albeit with much smaller data sets.

If our premise is correct, we expect to observe a quieter, more subtle brand identification on the more expensive products and a louder, more conspicuous brand identification on the relatively less expensive products. Thus, we predict a negative correlation between price and brand prominence—the extent to which the product advertises the brand by displaying the mark in a more visible or conspicuous manner (e.g., larger logos, repeat prints). We hypothesize that for luxury goods, on average, as the price goes up, brand prominence goes down.

In January 2008, we downloaded information on all the handbags offered by both LV and Gucci from the companies' respective Web sites. Louis Vuitton ($21.6 billion) and Gucci ($8.2 billion) are first and second, respectively, in Interbrand's (2009) ranking of the leading luxury brands of 2008, and they are rated second and third, respectively, on the Luxury Institute's list of the most familiar luxury handbag brands (see www.luxuryinstitute.com). The data include pictures, price information, and product descriptions for 236 bags from LV and 229 from Gucci that were available online at the time. The average price for an LV handbag was $1,240 (Mdn = $1,090), and the average price for a Gucci handbag was $1,448 (Mdn = $1,150). The range spanned from $225 to $3,850 for LV and from $295 to $9,690 for Gucci. The data set does not include all purses sold by LV or Gucci historically, but it is representative of what was being sold by these firms in early 2008. Personal discussions with Gucci and LV managers support our belief that bags sold online do not constitute a skewed sample. Louis Vuitton's selection online was reported to be identical to what is sold in its stores (special offerings excluded). Gucci's selection online is nearly identical, with the exception of a few unique items offered through each channel.

Method

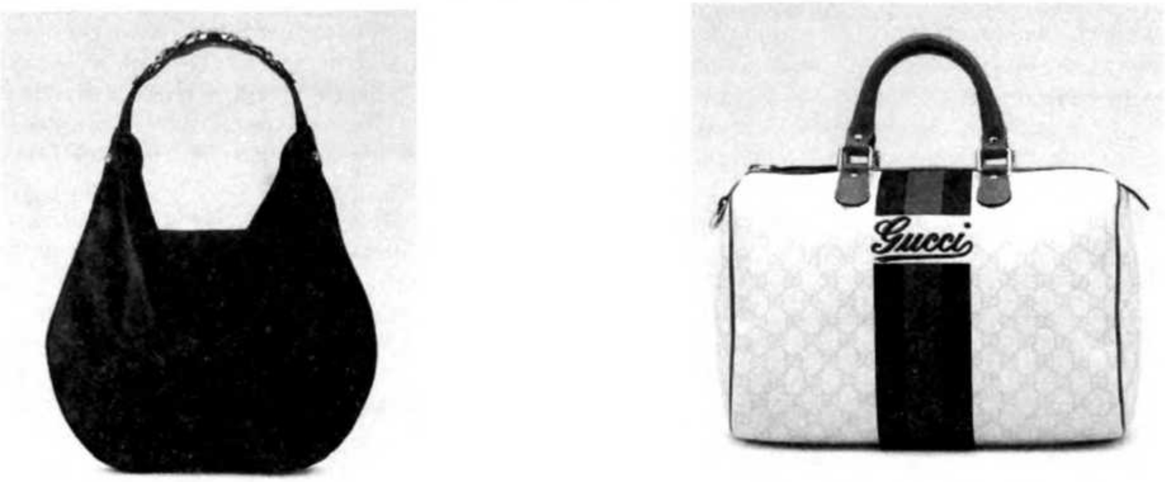
We coded each handbag according to brand prominence and several control variables, such as the bags' material and size. Three categories of primary material were used to construct the purses: (1) fabric (e.g., denim, canvas), (2) leather, and (3) exotic hide (e.g., ostrich). We relied on the manufacturers' dimensions of the bag as a proxy for surface area or the amount of material necessary to manufacture the bag.

Our notion of brand prominence was intended to capture how the different stockkeeping units varied in the extent to which they displayed the brand logo or identifying marks conspicuously to observers. To this end, three independent judges rated each bag on a seven-point scale (anchored at the extremes by "not at all" and "a great deal") on the following criteria:

1. How prominently does this bag display its trademark? (A trademark is a distinctive name, symbol, motto, or emblem that identifies a product, service, or firm.)
2. To what extent would this bag be recognizable as a Gucci (LV) product?

Each judge was trained to recognize the standard identifying marks of the two brands (e.g., the classic green and red striped pattern originated by Guccio Gucci signifies Gucci). Intrarater reliability was high (for all three judges, Cronbach's $\alpha > .97$). Interrater reliability was also high (across all pairs of raters, $\alpha > .9$). Therefore, we combined the judges' ratings into a composite measure of brand prominence ranging from "quiet" (1) to "loud" (7) (for an example, see Figure 4).

FIGURE 4
Quiet and Loud Gucci Bags



Gucci Handbag No. 170
Average Loudness Rating = 7
Price: $1,150

Gucci Handbag No. 120
Average Loudness Rating = 1
Price: $640

Results

The results appear in Table 1. Consistent with our predictions, the most important findings are those for the variable "prominence" ($\beta = -122.26$, $p < .01$) and for the interaction between prominence and brand ($\beta = 95.89$, $p < .01$), such that the slope for Gucci is –122.26 and that for LV is –26.37 (i.e., –122.26 + 95.89). The significant interaction indicates that these slopes are different from each other. The interpretation is that, on average, an increase in brand prominence of 1.0 on the seven-point scale equates to a $122.26 decrease in price for Gucci and a $26.27 decrease for LV ($856 and $185, respectively, when going from one extreme to the other). In addition, as we expected, the grade of the material matters. There is also an interaction between "surface" and "canvas," such that large canvas bags are more expensive than small ones, while this is not true for leather and exotic bags.

We replicated these results by examining the size of the Mercedes emblem (i.e., the Mercedes "star") on available cars and sport-utility vehicles. Assessing brand prominence was straightforward; we used the size in centimeters of the tri-star Mercedes logo displayed on the grill of the vehicles. We collected the data in January 2009, at which time Mercedes offered 47 different models of vehicles, ranging from two-door coupes to sport-utility vehicles (we did not include the SLR in the analysis because it is cobranded with McLaren). The vehicles ranged in price from $33,775 to $199,825, and the emblem size ranged from 7.6 centimeters to 18.5 centimeters.

As in the study of handbags, the dependent variable was the price of the car. The independent variables included brand prominence and a set of seven body-type dummies (e.g., coupe, sedan, wagon) included to account for different vehicles having different grill sizes and price points. The results reveal a significant overall effect of body type ($F = 3.51$, $p < .01$) and a significant main effect of emblem size ($\beta = -5215.58$, $F = 8.72$, $p < .01$), such that an increase in emblem size of one centimeter is associated with a decrease in price of the car of slightly more than $5,000. In summary, if we control for body type, less expensive Mercedes vehicles in the United States tend to boast a larger emblem.

To support the generalizability of these results, it was important to replicate the findings in a category catering exclusively to men. To this end, we used LV's 2009 men's shoe collection. The collection comprises 13 different pairs of shoes ranging in price from $485 to $1,170. Using photos drawn from the company's catalog and using the same scales, the same trained judges who rated the handbags rated brand prominence. Price remained the dependent variable, while brand prominence and leather quality (three levels: calf, patent, and python) served as independent variables. The results reveal a significant effect of leather quality ($F = 10.48$, $p < .01$) and a main effect of brand prominence ($\beta = -43.90$, $F = 5.57$, $p < .05$), such that when we controlled for leather quality, an increase in brand prominence of 1 on the scale is associated with a decrease in price of $43.90.

TABLE 1
Study 1: Statistics for Relationship Between Brand Prominence and Price

Variable	Parameter	t-Statistic	*p*-Value
Intercept	4401.83	15.34	<.01
Surface	–.24	–.50	.61
Canvas	–3039.76	–9.83	<.01
Leather	–2534.13	–8.38	<.01
Surface × canvas	1.10	2.15	.03
Surface × leather	.90	1.74	.08
LV	–481.60	–3.20	<.01
Prominence	–122.26	–4.95	<.01
Prominence × LV	95.89	3.44	<.01

$N = 417$, $R^2 = .54$, $F = 60.05$

Discussion

The data support the hypothesis that, on average, luxury brands Gucci and LV charge more for quieter handbags and shoes (i.e., those that display the brand less prominently). Similarly, Mercedes places larger emblems on its lower-priced cars, which is de facto evidence to suggest that people who purchase different classes of automobiles value brand prominence differently. These results support the idea that there is a class of consumers that is willing to pay a premium for luxury goods that display the brand name less conspicuously (i.e., patricians). The policy of lowering price while making the brand name more prominent seems to apply regardless of gender (men's shoes, women's handbags) and whether the category is considered more faddish (fashion goods) or durable (vehicles). In Study 2, we expand the scope of the investigation of marketplace phenomena by examining how the market for counterfeit luxury goods compares in terms of brand prominence.

Study 2: Brand Prominence and Counterfeit Goods

Counterfeits allow consumers to unbundle the status and quality attributes of luxury goods by paying less to acquire the status while not having to pay for the quality (Grossman and Shapiro 1988). Counterfeiters serve customers who aspire to own luxury goods but are unable or unwilling to pay for the real thing. Among those of limited means in the framework, poseurs rather than proletarians crave the status associated with prestigious brands. Furthermore, poseurs take their cues from the parvenus, who use signals that are easily decipherable, even to the uninitiated. This implies that the counterfeit market should consist primarily of the louder handbags parvenus carry rather than the quieter handbags patricians carry. Although there is no reason that counterfeiters cannot copy the pricier, quieter handbags as cheaply or easily as others in the manufacturer's product line, we hypothesize that counterfeit goods tend to be copies of lower-priced, louder luxury goods because they are what poseurs demand.

Method

To test the hypothesis, we combine the data collected on authentic handbags in Study 1 (handbags offered by LV and Gucci online in January 2008) with additional data from two distinct sources. First, we acquired a data set from intellectual property enforcement officials who confiscated counterfeit goods locally produced and sold in Thailand. Thailand is a manufacturing and distribution hub for fake goods and, consequently, has been on the U.S. Trade Representative's watch list for more than ten years. The data set contains pictures of 254 individual items that were confiscated as part of a raid on a manufacturer and seller of counterfeit Gucci goods. Therefore, the data are representative of the Gucci knockoffs that an Asian counterfeiter would produce and distribute to U.S. resellers (their Gucci knockoff product line). Second, because these data contain information only on Gucci, we augmented them with data from a Web site specializing in the sale of counterfeit handbags called knockoffbag.com. From that Web site, we collected data on all the handbags offered that were replicas of Gucci and LV products. There were 428 data points, 287 copies of LV bags offered for sale, and 141 copies of Gucci bags offered at the time we collected the data (April 2008). From the Web site, we collected pictures of the goods offered online, the price at which these counterfeit bags were offered, and any other information the seller posted about the goods. Together, we have 682 data points representing counterfeits of both Gucci and LV handbags. The data include the entire selection from a single producer and distributor (the Thai data) as well as individual items deemed to be desirable and thus offered for sale on a popular Web site. This provides perspectives from both the producer's and the consumer's vantage point.

Not all the bags in the data on counterfeits are copies of actual bags in the data set from Study 1; some are original designs created by the counterfeiters to look like Gucci or LV products. Because these are fake bags with fake designs, we refer to these as "fake-fakes." Thus, the data can be broken down into different classes, as we show in Table 2. Counterfeiters copied 211 of the 465 existing styles (45% of handbags were knocked off at least once). Counterfeiters were responsible for another 386 fake-fakes (original creations). Therefore, there were 851 different styles of bags in the data set (211 copies of current bags and 386 fake-fakes; the remaining 254 bags from LV and Gucci were not copied). Judges coded all the fake-fake bags in the exact same way as the authentic bags in Study 1 (correlation across judges for the composite measure was greater than .8).

Results

Table 3 summarizes the brand prominence (average rating) for the data in Studies 1 and 2. We analyzed the data using a 3 (type: original not copied, original copied, fake-fakes) × 2 (brand: LV, Gucci) analysis of variance. We find significant main effects of bag type ($F = 53.48$, $p < .01$) and brand ($F = 4.37$, $p < .05$) but no interaction between the two ($F = .53$, $p = .59$). The analysis shows that counterfeiters choose to copy bags that are significantly louder than the ones they do not copy ($M_{\text{LV\_Copied}} = 5.41$ versus $M_{\text{LV\_Not Copied}} = 3.79$, $p < .01$; $M_{\text{Gucci\_Copied}} = 5.50$ versus $M_{\text{Gucci Not Copied}} = 4.08$, $p < .01$). Furthermore, when the counterfeiters create their own variety of LV or Gucci bags (i.e., fake-fakes), their creations are also loud—on average, just as loud as the ones they copy ($M_{\text{LV\_Copied}} = 5.41$ versus $M_{\text{LV\_Fake\_Fake}} = 5.31$, $p = .71$; $M_{\text{Gucci\_Copied}} = 5.50$ versus $M_{\text{Gucci Fake\_Fake}} = 5.79$, $p = .30$). These results support our hypothesis that counterfeit handbags tend to be copies of the lower-priced, louder items in a luxury brand's product portfolio.

In Study 1, we found that brand prominence is negatively correlated with price. Therefore, it might be argued that counterfeiters pick the products to counterfeit on the basis of price, not brand prominence. To test whether brand prominence is the factor that drives counterfeiters' decisions about which styles to copy, we examined the probability of original handbags being copied as a function of price, brand, and brand prominence. In a first logistic regression (Columns 2 and 3 of Table 4), we include price and brand information but omit brand prominence. In a second regression (Columns 4 and 5 of Table 4), we include brand prominence information. The results show that when price is taken alone, the parameter is only marginally significant ($p = .09$),

TABLE 2
Study 2: Data Counts for Real and Counterfeit Gucci and LV Handbags

	Originals		Counterfeits	
Brand	Not Copied by Counterfeiters	Copied by Counterfeiters	Copies of Current Original Handbags	Fake-Fakes
LV	97	139	175	112
Gucci	157	72	121	274
Total	254	211	296	386

TABLE 3
Study 2: Brand Prominence for Real and Counterfeit Bags

	Originals			Counterfeits		
Brand	Not Copied	Copied	Overall	Copies[a]	Fake-Fakes	Overall
LV	3.79	5.41	4.75	5.48	5.31	5.42
Gucci	4.08	5.50	4.53	5.71	5.79	5.76

[a] The average rating of "Copies" does not equal the average rating of the copied bags, because some bags were copied multiple times.

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TABLE 4
Study 2: Brand Prominence Versus Price for Counterfeit Goods

	Price Only		Price and Prominence	
Parameter	Estimate	*p*-Value	Estimate	*p*-Value
Intercept	.10	.63	−1.52	<.01
Price	−.0002	.09	−.0002	.56
LV	.50	.01	.62	.20
LV × price	.00004	.75	−.00002	.94
Prominence			.20	.03
Prominence × price			.0001	.13
Prominence × LV			−.004	.96
Prominence × LV × price			1.2E–6	.99
N = 465	LR χ^2 = 39.86, $p < .01$		LR χ^2 = 87.03, $p < .01$	

Notes: LR = likelihood ratio.

and when brand prominence is added, the parameter for price becomes nonsignificant ($p > .5$), while the parameter for brand prominence is significant ($p = .03$). Furthermore, there are no significant interactions between brand prominence and price. The results suggest that price is not the decision variable for counterfeiters when deciding which styles to copy. With no discernible reference to price, counterfeiters seem to produce and sell louder handbags. As this analysis indicates, the louder an original handbag, the more likely it is to be knocked off by counterfeiters.

The data we collected from knockoffbags.com included price information for the counterfeit bags (we did not obtain any price information on the confiscated bags from the producer in Thailand). To examine how counterfeiters set prices, we examined the relationship between the price of counterfeit goods from knockoffbags.com and the price of the bag as listed by the original manufacturer, the brand prominence measure, and the brand (LV or Gucci). The results (see Table 5) show that when counterfeiters choose which styles of handbags to copy, they determine the price of their offerings on the basis of the price charged by the original manufacturer ($\beta = .03$, $p < .01$). In other words, counterfeiters price their knockoffs higher for bags that sell at higher prices by the original manufacturers regardless of how loud the bag is ($\beta = -.84$, not significant). Although counterfeiters limit themselves to selling relatively loud bags, they subsequently set prices in accordance with the original manufacturer's product line.

Discussion

In Study 2, we show that the handbags counterfeiters choose to copy are the loud ones (i.e., their product line is driven by brand prominence). These are the bags that parvenus favor. It appears that poseurs, who are the most inclined to buy the fakes, demand what the parvenus are showing off—namely, the loud handbags—in line with a desire to prominently associate themselves with this group.

TABLE 5
Study 2: Original Manufacturer's Price and the Price of Counterfeit Bags

Parameter	Estimate	F	*p*-Value
Intercept	193.35		
LV	−1.58	.16	.69
Brand volume	−.83	1.12	.29
Price of the original product	.03	130.30	<.01
N = 228, R^2 = .48, F = 54.38			

Study 3: Recognizing Subtle Brand Cues

Our theorizing presumes that patricians are more attuned to the distinguishing traits of luxury goods and therefore can recognize products and their prices without the need for conspicuous brand displays. In contrast, nonpatricians (parvenus, poseurs, and proletarians) cannot recognize the subtle cues and require loud signals to recognize a brand and the connotations of status. If this is the case, patricians can use subtle cues to signal each other, while parvenus must use loud cues to dissociate from the poseurs and proletarians.

In Study 3, we test this directly by studying the impact of brand and brand prominence on signal recognition in relation to brand recognition and price knowledge among patricians and nonpatricians. Patricians are expected to be more likely to recognize subtle brand cues than members of the other groups and therefore are less reliant on prominent brand placement to infer the relative price of a luxury handbag. We expect nonpatricians to view prestige bags with prominent branding as more expensive than similar bags (i.e., same manufacturers costing as much or more) with subtle and, thus, unrecognizable brand cues. Conversely, we expect patricians to correctly recognize these similar but subtly marked bags for the brand they are and, thus, to properly assess their relative prices.

Method

Respondents. Participants in this study were 120 consumers, comprising two groups of 60 survey respondents. The first group was selected on the basis of the likelihood that members would qualify as patricians. The marketing research firm Claritas (a division of ACNielsen) classifies zip codes according to demographic traits, lifestyle preferences, and consumer behaviors. The use of these Claritas profiles enabled us to select residents of the Palos Verdes Peninsula in Los Angeles County in Southern California to survey consumers. Zip code 90274 had the highest concentration (95.42%) of segments that the firm identifies as

"Upper Crusts," "Blue Bloods," and "Movers & Shakers"—segments that best represent patricians (see Appendix A). These segments comprised three of the highest-income groups (the top 4.12% of U.S. households) among the 66 segments Claritas uses to categorize consumers. We recognize that Movers & Shakers might straddle the boundary between patricians and parvenus, but even if we ignore this group, zip code 90274 still provides one of the highest concentrations of Upper Crusts and Blue Bloods nationally. If patricians want to associate with patricians, we would expect to find them living close to each other as well.

The second group was selected on the basis of members' geographic proximity to the first group (thus, we controlled for factors such as weather, local fashion trends, and so on) and the likelihood that they would not qualify as patricians and thus could be considered parvenus, poseurs, or proletarians. They consisted of 60 people in Los Angeles County from zip codes 91371 (Woodland Hills), 91601 (North Hollywood), and 91607 (Valley Village), areas determined by means of the Claritas data to include negligible concentrations of the aforementioned groups (Upper Crusts, Blue Bloods, and Movers & Shakers). Residents in these zip codes were diverse and ranged from Money & Brains (educated, well-to-do, and sophisticated) to Bohemian Mix (upper-middle income, ethnically diverse, early adopters) to Big City Blues (lower-middle income, modest educations, ethnically diverse). Relying on respondents who reside in these zip codes provided us a sample of consumers who would stand little chance of qualifying as patricians but were affluent enough to qualify as parvenus.

Researchers who were blind to our theorizing were contracted to survey residents from each selected area. This included, for example, visiting the upscale shopping district known as the Promenade on the Peninsula, which services four cities on the Palos Verdes Peninsula: Rolling Hills Estates, Palos Verdes Estates, Rancho Palos Verdes, and Rolling Hills. Shoppers were prescreened to ensure that they were residents of zip code 90274. Of those surveyed, 60 met the thresholds for age, education, and household income regarding the segments that Claritas provided and thus were included in the analysis as patricians. The researchers also went to a variety of shopping malls in the San Fernando Valley area of Los Angeles (e.g., Westfield Promenade in Woodland Hills) and collected similar data from residents of zip codes 91371, 91601, and 91607.

Stimuli and design. Respondents were shown nine designer handbags, six of which were the focal bags of interest. These six included three pairs of bags from the individual luxury brands Chanel (most expensive), LV, and Coach (least expensive). For each brand, we selected a bag that was pretested to rate at the high end on the prominence scale and one rated at the low end. The remaining three bags were inexpensive fillers (one Ralph Lauren, one Kipling, and one Longchamp). For both LV and Coach, the quiet handbag was more expensive than the loud handbag. For Chanel, the loud bag was more expensive and the most expensive one in the set. Although Coach's position as a luxury brand is hotly debated, we included this brand because, at the time of the study, it was by far the market leader in handbags and leather accessories in the United States (Hass 2008) and ranked first in the Luxury Institute's "Handbag Brands 2008" report that analyzed which of 26 brands luxury consumers are most familiar (Hall 2008).

In the first condition, pictures of these nine handbags were shown with the respective brand names printed below each image. In the second condition, the brand names were removed, and the bags were shown without any additional information. As mentioned previously, we ran this study on two distinct populations described as patricians and nonpatricians. As such, the design was a 2 (class: patricians versus nonpatricians) × 2 (brand prominence: loud versus quiet) × 2 (identification: brand names provided, brand names not provided). Class and identification varied between subjects, and brand prominence varied within subjects. Respondents were asked to rank the nine handbags from most to least expensive.

We predicted a three-way interaction such that brand prominence would elevate price perceptions (i.e., rankings) but only when the brand name was absent and respondents were not patricians. Patricians should recognize the quieter prestige bags (the quiet Chanel, LV, and Coach purses in the set) for what they are even without the brand name present. However, the brand serves as a cue regarding price to the nonpatricians. Only when the brand names were present were the nonpatricians expected to recognize the quiet luxury bags for what they were and rank them appropriately. Therefore, we expected the presence or absence of brand names to affect price rankings only for nonpatricians, who rely on overt branding as a signal.

Recall that patricians are characterized by the typology according to their financial means (high) and need for status (low). In terms of a manipulation check, we expected the patricians to have a lower consumption-related need for status than the nonpatricians because patricians are not as concerned with differentiating themselves vertically from lower groups. Respondents completed Eastman, Goldsmith, and Flynn's (1999) need-for-status scale, which comprises statements such as "The status of a product is irrelevant to me" and "I would pay more for a product if it had status," to which respondents indicated their level of agreement on a seven-point Likert scale. With respect to financial means, we relied on income as a proxy, asking respondents to report their annual household income on a six-item scale (i.e., under $59,999, $60,000–$99,999, $100,000–$139,999, $140,000–$179,999, $180,000–$209,999, and $210,000+). We also collected other demographic variables, such as age, race, and gender.

Results

To test whether the screening of the sample of Palos Verdes Peninsula residents was effective, we first compared their need for status with the San Fernando Valley population. As we expected, those surveyed from zip code 90274 (i.e., patricians) had a lower need for status on the Eastman, Goldsmith, and Flynn (1999) scale ($M_{Patricians} = 3.59$ versus $M_{Nonpatricians} = 4.51$; $F = 63.27$, $p < .01$). For income, we compared the average rank on the six-tiered scale across the two groups, such that a higher number corresponded to a higher income bracket (e.g., 6 = $210,000+). Patricians reported higher annual household incomes than nonpatricians ($M_{Patricians} = 4.12$ versus $M_{Nonpatricians} = 2.15$; $F = 45.91$, $p < .01$). Taken together, differences in need for status and income enable us to contrast distinct groups of consumers classified according to the typology as patricians and nonpatricians.

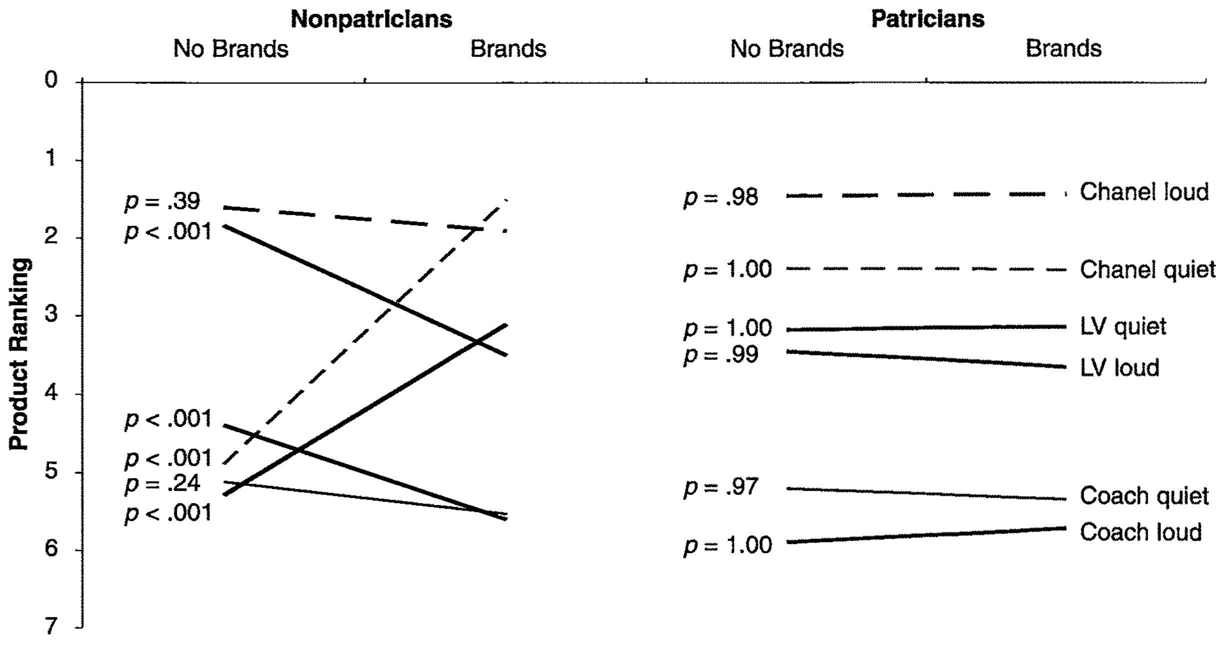
We analyzed the data using three separate analyses of variance (one for each brand) with main effects for the type of purse (quiet versus loud), the condition (brands versus no brands), and the respondent type (patrician versus nonpatricians) with the three two-way interactions and the three three-way interactions. The three-way interactions for LV and Chanel were significant ($p_{LV} < .01$, $p_{Chanel} < .01$); for Coach, it was not significant ($p_{Coach} = .44$). Most two-way interactions (six of nine) were significant at $p < .01$; two others were marginally significant ($p = .07$, $p = .09$). The mean scores by population appear in Figure 5. In this graph, the loud bags are depicted with bold lines, and the quiet bags are depicted with thin lines.

The pattern of results reveals that patricians are more apt to recognize the true value of the bags we tested. They correctly rank-ordered the bags from most expensive to least expensive and did so with or without explicit brand names (none of the rankings differed significantly when brand names were present or absent; for all bags, $p > .3$). They even recognized correctly that the loud Chanel bag was more expensive than the quiet one and that, for the LV and Coach handbags, it was the opposite. Thus, they were not misled by the prominence of the brand names.

In contrast, nonpatricians ranked all three loud bags higher than the quiet bags when no brand names were present. When brand names were present, the quiet LV and Chanel bags received a boost in rating, and the loud LV and Coach bags fell in the ranking (all changes are significant at $p < .01$), such that the quiet bags were rated higher than their loud counterpart (for LV and Chanel, differences are significant at $p < .01$; for Coach, $p = .06$). These results are substantively identical if we separate the wealthy respondents (income >$99,000) of the nonpatrician sample (21 respondents) from the other nonpatricians. With a significantly higher need for status than the patricians ($M_{Patricians} = 3.59$ versus $M_{High\text{-}Income\ Nonpatricians} = 4.46$; $F = 26.9$, $p < .01$), this group qualifies as parvenus. Their rank-ordering of the handbags is the same as the other nonpatricians (for all six brands, $p > .05$), while it is different from the rankings of the patricians. Notably, the nonpatricians erroneously rated the quiet Chanel bag as being more expensive than the loud one, while the patricians correctly rated the loud bag in this instance as more expensive.

Given that the dependent variable was ordinal (rank) rather than interval and that the rank given to a bag by one person is not independent of the ranks he or she gives to the other bags (no two bags can be ranked first by the same person), we checked the robustness of the results using a series of Kolmogorov–Smirnov tests. We use these tests to compare the distribution of rankings for a single bag for a single group (i.e., within patricians or within nonpatricians) in the no-brand versus brand-provided conditions. The p-values for each pairing appear in Figure 5. As expected, we find no change among patricians (their rankings did not change when the brand was present versus when it was not), while four of six change significantly when the brands were present for the nonpatricians. This confirms that patricians do not need to be told the brand names of the bags to know their relative prices, while the nonpatricians significantly change their ordering when the brand names are revealed.

FIGURE 5
Signal Recognition Among Patricians and Nonpatricians



Notes: p-values are derived from Kolmogorov–Smirnov tests between no brands and brands for each product.

Discussion

Study 3 demonstrates that patricians do not require prominent brand markings to judge the value of a bag. They can recognize bags from the subtle design features of each of the manufacturers and accurately judge their relative price. During interview debriefings, patricians told us about these subtle cues, including the shape of LV's handle base, leather reinforced corners, and removable key bell, as well as Chanel's Mademoiselle turn lock, interlaced chains, and quilted stitching. These details are often lost on nonpatricians, who need to see the brand prominently displayed to recognize a bag as an expensive luxury brand. Recall the discussion of the Bottega Veneta brand, which turned its back on being easily recognizable to the masses by putting its logo discreetly inside its creations. It would appear that this brand caters to patricians.

This differential ability to recognize signals is essential for explaining the difference in behavior between patricians and other classes of consumers. Patricians can read the subtle signals and thus can use quiet products to signal horizontally. In contrast, parvenus, poseurs, and proletarians require coarser signals. Thus, parvenus use loud products to signal to the groups below them that they are distinct. They want to indicate to the have-nots that they are elite and to the haves that they are part of their group. The irony is that while many parvenus believe they are saying to the world that they are not have-nots, in reality, they may also be signaling to patricians, the group they want to associate with, that they are not one of them.

Study 4: Associative/Dissociative Motives and Brand Prominence

In this study, we set out to test several predictions that emerge from the model. First, we predict that patricians prefer relatively quiet bags, and parvenus and poseurs prefer relatively loud bags. Second, we propose that this preference is due, in part, to whom they intend to signal, which would be reflected by different associative/dissociative motives. We expect patricians to report that they want to associate with other patricians but do not have a specific desire to dissociate from the other three groups. In contrast, we expect that parvenus will display a desire to dissociate from poseurs and proletarians (the have-nots) while associating with parvenus and patricians (the haves). Similar to the parvenus, poseurs will seek the company of the haves but are not expected to display the same desire to dissociate from the have-nots as the parvenus. Finally, we do not expect the proletarians to display any strong associative/dissociative tendencies.

Method

Participants in Study 4 were 120 survey respondents initially screened in a manner identical to that in Study 3. In this study, however, we collected a proportionally larger sample of nonpatricians with the hope of ensuring a significant representation from each of the three other classes of consumers. The zip codes, along with these measures of income and need for status, enabled us to classify respondents as patricians, parvenus, poseurs, or proletarians. In addition, we pretested four separate descriptions of individuals such that each was viewed as distinctly representing someone from one of the four classes of consumers defined by our taxonomy (see Appendix B). As a further check, respondents were asked to read each portrayal and to rank them in terms of how similar they were to the person being described. We expected their self-categorization to be consistent with the classification made based on wealth and need for status.

Next, respondents were asked to indicate their desire to associate with or dissociate from each of the four classes of consumers in the taxonomy using graphical images to measure the relationship between the self and the groups developed by Schubert and Otten (2002). The OSIO (overlap of self, in-group, and out-group) self-categorization scale includes seven pictures, each displaying a small circle (labeled "self") in various stages of overlap with a larger circle (labeled "they") such that a seven-point scale is created on the basis of the distance between the midpoints of the two circles ranging from a long distance (coded as 1) to a medium distance (4) to zero distance (7). The scale draws on the technique for measuring interpersonal closeness that Aron, Aron, and Smollan (1992) developed and research demonstrating that group identification can be measured by the degree to which a group is included in the self (Coats et al. 2000; Tropp and Wright 2001).

Finally, respondents chose their preferred handbag among three pairs of purses, such that a picture of a loud luxury bag was coupled with a quiet handbag that was virtually identical except for the degree of brand prominence. The use of "twin" bags was intended to control for influence of factors other than how loudly or quietly the brand was displayed, such as idiosyncratic preferences based on a specific bag's aesthetics. Although the bags were chosen to minimize any difference in price, respondents were instructed to make their choice assuming that either bag could be acquired for the same price. Survey participants then completed measures similar to those collected in Study 3, including Eastman, Goldsmith, and Flynn's (1999) need-for-status scale, as well as a series of demographic questions, including income, race, and gender, before being debriefed regarding the true intent of the study.

A subsample of 65 respondents in the San Fernando Valley were surveyed separately in much the same way, except that they indicated their preference between a loud and a quiet handbag for only a single pair before being asked the following:

> Assume your friend is traveling abroad and can purchase a counterfeit of your preferred handbag. It would be indistinguishable from the authentic handbag to observers on the street. How likely would you be to ask your friend to secure you a knockoff?

Respondents indicated the likelihood on a seven-point scale ranging from "not at all" (1) to "extremely" (7). They were also asked if they owned any fake handbags and, if so, to indicate how many they owned. They, too, completed Eastman, Goldsmith, and Flynn's (1999) need-for-status scale and indicated their income, age, and gender.

Results

Table 6 presents basic statistics about the 120 respondents. The statistics are broken down according to a classification of respondents into the four classes given a median split on income (≤$99,000 a year versus >$99,000) and need for status (≤4.2 on a seven-point scale versus >4.2). The results are substantively identical when we use the self-classification into the four groups rather than the classification based on the median split: 72% of the participants self-classified themselves in line with the median split.

Self-report measures of income indicate that those who would be classified as patricians have the highest income, followed by parvenus, poseurs, and proletarians. The differences in income between poseurs and proletarians is not significant ($p = .18$), while the difference between patricians and parvenus is ($p < .05$), as is the difference between parvenus and poseurs or proletarians (for both, $p < .05$). Although the taxonomy does not specify an income difference between patricians and parvenus, we suspect that this difference occurred as a result of the collection methodology that sought out patricians from a zip code where incomes are some of the highest in the country. In terms of need for status, consistent with our theorizing, we observe two groups: Patricians and proletarians possess a lower need for status, and parvenus and poseurs possess a higher need for status. Individual contrasts between high and low need for status groups are significant at $p < .01$, while contrasts within high or low need for status groups are not significant at $p = .05$.

In terms of each group's desire to associate with and dissociate from their own and the other three groups (see Table 7 and Figure 5), as expected, we find that patricians want to associate with other patricians but do not attempt to dissociate from the other groups. Parvenus want to associate with both patricians and parvenus (the haves) and exhibit a strong desire to dissociate from poseurs and proletarians (the have-nots). Akin to the parvenus, the poseurs seek the company of the haves, but they do not show a meaningful desire to dissociate from the have-nots. Finally, the proletarians seem happy to associate with all four groups without any significant differences.

TABLE 6
Study 3: Summary Statistics for Income and Need for Status Based on Median Split

Class	N	Income	Need for Status
Patrician	25	4.48^a	3.25^a
Parvenu	31	4.11^a	5.08^b
Poseur	32	1.41^b	4.99^b
Proletarian	32	1.36^b	3.65^c

Notes: Numbers with the same superscript column-wise are not statistically different from each other.

TABLE 7
Study 3: Class and Associative/Dissociative Preferences Based on Median Split

Class	Patrician Ms. K	Parvenu Ms. A	Poseur Mr. L	Proletarian Mr. T
Patrician	5.69^a	3.76^b	3.83^b	3.72^b
Parvenu	5.19^a	4.78^a	3.22^b	3.00^b
Poseur	5.20^a	4.90^a	3.77^b	3.52^b
Proletarian	4.13^a	4.00^a	4.17^a	3.90^a

Notes: Numbers with the same superscript row-wise are not statistically different from each other.

Preference Between Loud and Quiet Luxury

The purpose of the study was to determine whether the likelihood of purchasing a loud rather than quiet bag varied by group. We predicted that patricians would prefer quieter bags, while parvenus and poseurs would prefer louder bags. We did not make a prediction about proletarians. To test these predictions, we ran a logit regression using each respondent's selection when offered a choice between loud and quiet twin bags (three choices per respondent) as the dependent variable and the respondents' self-classification into one of the four groups as the independent variable. We found no difference based on order (the handbags appeared in the same order, so we originally included dummies to account for order), so we collapsed the data. Again, the results are substantively identical if we use self-categorizations instead of median splits to classify respondents into the four groups.

We find that the least likely group to buy a loud bag is the patricians ($\beta = -1.82$, $p < .01$, P[Buy Loud] = .14). Proletarians are indifferent between loud and quiet bags ($\beta = .01$, $p = .93$, P[Buy Loud] = .50). The other two groups show a likelihood significantly larger than 50% of purchasing a loud bag, with the parvenus exhibiting a likelihood of a loud purchase at 71.60% ($\beta = .93$, $p < .01$) and the poseurs a likelihood of 74.71% ($\beta = 1.08$, $p < .01$). The difference between the parvenus and the poseurs is not significant ($p = .65$). These results provide support for the model, demonstrating the usefulness of using the taxonomy to classify consumers and how this classification is indicative of social motives and, thus, preferences between quiet and loud luxury goods.

Finally, the subsample of respondents asked about their likelihood of purchasing a counterfeit bag was categorized in accordance with the same methodology described previously. This revealed a relatively small sample of patricians and proletarians (five of each group), who we excluded from the analysis, given our focus on the difference between poseurs (33) and parvenus (22). First, as we expected, these parvenus and poseurs exhibited a distinct preference for loud handbags (84%), which makes them the prime market for counterfeit bags. Second, poseurs expressed a significantly greater intent to purchase a counterfeit bag than parvenus (88% versus 18%, respectively; Wald $\chi^2 = 18.90$, $p < .01$). In addition, they were more likely to own a counterfeit bag (88% versus 23%, respectively; Wald $\chi^2 = 20.58$, $p < .01$) and reported owning more counterfeit bags on average ($\mu_{poseurs} = 1.72$ versus $\mu_{parvenus} = .23$, $t_{21} = 4.53$, $p < .01$).

Discussion

In Study 4, we demonstrate the usefulness of our taxonomy for classifying consumers both in predicting their social motives (associative and dissociative) and, more important for marketers, in predicting their preferences between loud and quiet products. Furthermore, we show that poseurs are significantly more likely to buy counterfeits than parvenus. Intuitively, this follows from their high need for status and their low financial means. Note that though the sample was small, not one of the five patricians surveyed was inclined to buy a counterfeit. Recent work by Commuri (2009) has documented how, because of a proliferation of counterfeiting, the social elite in India and Thailand gravitate preemptively toward brands that lower-income consumers find difficult to detect. Although this is not the primary motive here, the findings suggest that patricians stick with the brand but favor items that are least likely to be copied—namely, the quiet ones.

General Discussion

Veblen's (1899) view of conspicuous consumption assumes the prevalence of a need for status. Savvy luxury goods manufacturers apparently find enormous support for this idea, as a more than $200 billion global luxury industry has developed in part because of traditional luxury houses such as Dior, Cartier, and Chanel moving down-market (Gumbel 2007). This recent large-scale foray of luxury brands into mass marketing has transformed Veblen's two-tier society (the haves and the have-nots) into a more complex array of consumers who use luxury to signal in many different ways and for many different reasons. A better understanding of the luxury goods market requires a variety of discriminate methods designed to capture the many motivations for conspicuous consumption. We propose a classification of consumers into four groups based on their wealth and need for status.

Note that though we speak of four classes as if consumers behave strictly according to our rules, in actuality, behavior may vary depending on the product category and the usage occasion. A patrician might wear a Rolex (a classic parvenu brand) while sailing because the Yacht-Master II is a dependable, indestructible watch. Functionality prevails, though a signaling motivation might be mistakenly inferred. A proletarian might splurge once on an LV bag that she has seen a celebrity carry, indulging in what Dubois and Laurent (1995) call an excursion into luxury. Certainly, there are finer gradations of consumers that could be explored. However, our model speaks to the empirical generalities observed in real-world data and distinct affiliation desires as well as varied product and price knowledge revealed by the field studies.

Although branding experts typically advise marketers to ensure that their brand is clearly and prominently displayed on products, this prescription may not hold for some luxury goods, particularly those at the high end of the product line. With the handbag and shoe data, consumers could buy a functionally equivalent good in either a loud or a quiet version. Indeed, many of the purses and shoes in Study 1 included twins or triplets—bags or shoes that were otherwise identical but differed in their exterior design and, thus, brand prominence. A strength of this research is that we demonstrate how less expensive, louder products are geared to a different class of customer than subtler, more expensive goods. We show how luxury goods manufacturers can target two types of customers simultaneously by making their brands more or less prominent and varying price accordingly across products within a single line.

Managerial Implications

The findings have numerous implications for managers in the luxury space. First, the findings suggest that managers need to develop a *griffe* (from the French word for "scratch"), or a set of special signatures, for their brand. They need to develop the subtle cues that identify their products as their own even in the absence of an explicit logo or brand name. Remove the emblem and a Porsche is still recognizable as a Porsche; it will not be confused with a Maserati or Lexus. Even the Cayenne sport-utility vehicle looks like a Porsche. In contrast, remove the star from its hood and a Mercedes might be mistaken in passing for a Lexus. Consider how Gucci uses its distinctive bamboo as hinges on sunglasses, handles on purses, and bands on watches. The *griffe* allows patricians to signal associative desires to each other without sending the dissociative message that parvenus do when they signal using loud products. Along with developing a *griffe*, firms should educate certain target customers about these subtle but recognizable details. For example, watchmaker Breguet informs its clientele about "the discreet decorative details that constitute the Breguet style," including the Breguet cursive numerals and engine-turned silver dials.

Second, a luxury goods manufacturer may want to resist the urge to leverage its brand by popularizing its trademark. Short-term sales can be increased by establishing a lower-priced line or extending the brand to multiple categories; these products are likely to sell well if they are advertised with the prestigious labels of their high-priced forebears. However, if too many people sport the brand's logo, the mark loses its value as a dissociative status signal. This was a problem that Burberry faced in the 1990s when its trademark checked plaid became ubiquitous and was fashioned into everything from bikinis to umbrellas. Conversely, reining the brand in too tightly may make it irrelevant and limit its value as a signal to the lower classes, required for the parvenus. A delicate balance must be struck, which is what Burberry attempted to do when it vastly reduced its number of loud products and began taking its signature check "undercover" (e.g., putting it subtly under a shirt collar and inside pockets). Our work suggests that a mixture of quiet items known for their quality, aesthetics, and other attributes with loud items that allow parvenus to satisfy their consumption-related need for status has helped LV and Gucci become the world's first and third "most powerful" luxury brands, respectively (Sherman 2008).

Third, although marketers traditionally recommend that firms focus their advertising on their target market, luxury goods manufacturers must consider advertising to everybody. Parvenus should believe that proletarians and poseurs know the brand and will recognize them as wealthy when they display it. If the brand were unknown to the general public, it would not serve as a dissociative signal. In addition, when advertising to the masses, the message must be aspirational rather than functional. Consider LV's 2008 foray into television advertising. The campaign promoted the brand, not any specific product, and a handbag made only one fleeting appearance. Focusing on its travel heritage with a collage of moody images from France, Spain, India, and Japan, the advertisement was intended to tell consumers that LV is something "éphémère, but also something that stays" (Pfanner 2008).

Finally, it may prove useful for luxury goods manufacturers to reassess the traditional pyramid approach to luxury. Conventional wisdom depicts a "trickle-down" theory of status. For example, haute couture is notoriously unprofitable for design houses but a necessity in appealing to those who aspire to have $100,000 custom-made dresses with more moderately priced designs. The notion is that luxury brands must appeal to the crème de la crème of clientele for less sophisticated consumers to find their wares attractive. This may not always be the case. Indeed, it seems that label-conscious parvenus cannot recognize, and thus may not be aware of, much of what the patricians are buying, whether it is their $3,500 bottles of Krug Clos d'Ambonnay champagne (not $125 Dom Perignon) or $1,350 Bottega Veneta wedge-heel shoes (not $200 Betsey Johnson wedges).

Limitations and Further Research

This work is not without its limitations. First, the counterfeit data are based on what is offered by Asian producers and resellers. Much of what is known about consumer attitudes toward counterfeits and why they buy is presumed to generalize across borders (see Commuri 2009). However, it would be useful if, in the future, researchers could document what is brought into or sold more directly in the United States to better understand the trends among local consumers. Future work could explore cultural differences involving false signaling using counterfeit luxury goods.

Second, we based this investigation of brand prominence on what firms such as LV, Gucci, and Mercedes-Benz offer in their product line and not what sells. Further research could track sales, perhaps identifying undocumented reasons consumers buy particular styles or designs. To this end, we explore what signals are recognizable and which types of designs are favored, but we do not delve deeper into the aesthetic and emotional components of the decision. This is a topic we plan to explore in the future as we examine the emotional responses involved in signaling and counter-signaling using luxury goods. This promises to be a fruitful avenue for future work.

A strength of this research is the documentation of how price and brand prominence vary within a single brand's product line. However, a question for further research might be how firms that market more conspicuously branded goods than those we presented here might affect their status by introducing quieter goods. For example, we would predict that Coach, renowned as "affordable luxury," would cost less and offer a louder line of handbags on average than LV. Indeed, the average bag at the Coach Allentown, Penn., store costs $300, and the firm produces only a small number of expensive items (Hass 2008). Would introducing a line of quieter products help elevate Coach's status? Coach is planning to offer higher-priced, toned-down products, including a $2,100 ostrich version of its Hamptons bag at its boutique store on Bleecker Street in Manhattan, as an experiment in appealing to more affluent consumers (Hass 2008). It is yet to be found whether the products offered at this new boutiques will elevate the store's status among New Yorkers to the levels of Gucci or LV.

Appendix A
Selected Claritas Segments

Code 01: Upper Crust: Wealthy, Older Without Kids

The nation's most exclusive address, Upper Crust is the wealthiest lifestyle in America—a haven for empty-nesting couples between the ages of 45 and 64. No segment has a higher concentration of residents earning over $100,000 a year or possessing a postgraduate degree. And none has a more opulent standard of living.

2007 Statistics

- Households: 1,733,015
- Proportion of population: 1.52%
- Median income: $111,546
- Age ranges: 45–64

Code 02: Blue Blood Estates: Wealthy, Older With Kids

Blue Blood Estates is a family portrait of suburban wealth, a place of million-dollar homes and manicured lawns, high-end cars, and exclusive private clubs. The nation's second-wealthiest lifestyle is characterized by married couples with children, graduate degrees, a significant percentage of Asian Americans, and six-figure incomes earned by business executives, managers, and professionals.

2007 Statistics

- Households: 1,113,569
- Proportion of population: .98%
- Median income: $116,546
- Age ranges: 45–64

Code 03: Movers & Shakers: Wealthy, Middle Age Without Kids

Movers & Shakers is home to America's up-and-coming business class: a wealthy suburban world of dual-income couples who are highly educated, typically between the ages of 35 and 54. Given its high percentage of executives and white-collar professionals, there's a decided business bent to this segment: members of Movers & Shakers rank number one for owning a small business and having a home office.

2007 Statistics

- Households: 1,836,308
- Proportion of population: 1.62%
- Median income: $100,275
- Age ranges: 35–54

Appendix B
Descriptions of Prototypes of the Four Classes of Consumers

Ms. K (Patrician)

Ms. K lives in Boston. She is a lawyer and partner at a firm begun by her great grandfather. She cut her hair short after she became tired of the knots and tangles caused by driving with the top down in her convertible. She likes to take ski vacations whenever she gets a chance and owns a chalet in Aspen. Her favorite brand is Chanel and her favorite purse is the iconic Chanel 2.55 bag, which was introduced in 1955. She collects modern art and sits on the board of directors for several museums and galleries. She finds ostentatious products that have the brand plastered on them offensive and the nouveaux riches completely gauche.

Ms. A (Parvenu)

Ms. A owns a family-run restaurant in Chicago. She started as a prep cook at a small local restaurant and worked as a waitress, bartender, and manager. With her experience in local restaurants, she started up her own contract catering business, which was a big success and led to opening her own restaurant. She now lives in Oak Park, Illinois, where she remodeled her house to look as if it were designed by Frank Lloyd Wright. She often shops at Bloomingdale's and drives a Lexus ES. She loves Prada but only wishes the emblems on the products were bigger so everyone could see she wears Prada.

Mr. L (Poseur)

Mr. L works as an accountant for an independent CPA office in Indianapolis. He likes to work on cars and has customized his 2004 Lancer. He is now considering buying a convertible and restoring it. He loves barbecue and has several different kinds of grills and smokers. He likes Ed Hardy and Affliction and has become a big fan of mixed martial arts. He resents paying more than $50 for a T-shirt so he buys knock-offs in downtown LA. He has a sneaker collection, with more than 70 pairs of shoes including classic Nike and Adidas designs from the 1980s. He loves premium brands but thinks the companies make too much money on them and thus has no problem with counterfeits—including a fake gold Rolex his friends admire.

Mr. T (Proletarian)

Mr. T is a cashier at a supermarket in Los Angeles. He works a minimum of 30 hours a week and he spends the rest of his week auditioning for roles. He drives a used Hyundai because it's cheap and reliable, and he doesn't pay much attention to all the hype about fancy cars. He eats a lot of Baja Fresh and has driven into Tijuana and down to Rosarita Beach, where his favorite Mexican restaurant is located. He is a big fan of Patron tequila. He likes Sketchers shoes and has several pairs, although he does not pay much attention to brands.

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Anthony D. Cox, Dena Cox, & Susan Powell Mantel

Consumer Response to Drug Risk Information: The Role of Positive Affect

Risk disclosure is an essential element of the marketing of prescription drugs and other medical products. This study examines how consumers respond to verbal information about the frequency and severity of medical-product risks and how media-induced affect can moderate such responses. The study finds that consumers tend to overestimate the actual likelihood of adverse events described with words such as "common" or "rare" (compared with the probabilities such terms are typically intended to convey) and that consumers tend to give little weight to such probability language when forming product use intentions. However, consumers in positive media-induced moods seem to engage in more nuanced evaluation of product risk information, weighing both frequency and severity information and using such information to make inferences about other product attributes (e.g., product efficacy). These findings suggest that medical marketers and regulators need to devise more effective means of communicating risk probability to consumers and that positive mood induction (e.g., by placing advertisements in upbeat media environments) can enhance consumers' ability to process product risk information.

Keywords: affect, product risk, health behavior, advertising

For many years, consumers have been exposed to product risk statements, ranging from health warnings in tobacco advertising to financial loss disclaimers in mutual fund advertisements (Hoy and Andrews 2004). However, the prevalence and prominence of such warnings have increased dramatically in recent years, with the rapid growth of direct-to-consumer (DTC) marketing of prescription drugs and medical devices. When the Food and Drug Administration (FDA) was created in the early twentieth century, consumer drug advertising was still associated with the misleading claims of nineteenth-century "snake oil" purveyors. Therefore, the FDA required manufacturers of prescription drugs to limit their promotional efforts to physicians, pharmacists, and other health care professionals. However, beginning in the late 1980s, the FDA began to relax the rules on consumer advertising of prescription drugs, setting off an accelerating growth in DTC advertising over the next two decades, from $12 million in 1989 (Calfee 2002) to $4.8 billion in 2007 (*Pharma Marketletter* 2009).

However, DTC advertising has important regulatory restraints. The FDA (1999) mandates that any DTC advertisement that mentions both a brand name (e.g., Lipitor) and its purpose (e.g., reducing serum cholesterol) must also contain a "major statement" of product risks within the advertisement's main body. The risks described in DTC advertisements vary from severe (e.g., liver damage, birth defects) to fairly mild side effects (e.g., dry mouth, drowsiness) and also vary in reported likelihood. Thus, some adverse events are described as "rare" or "very rare," and others are described as "common" or "commonly reported." Indeed, FDA (2004) guidelines suggest that both the most serious risks and the three to five most frequently occurring risks should be mentioned.

The implicit assumption of such risk disclosure is that consumers will be able to appropriately interpret and weigh risk information to make informed health care choices (e.g., Calfee 2002; FDA 2004). Many models of health care decision making (e.g., protection motivation theory, health belief model; see Berry 2004; Schwarzer 2001) can be classified as "expectancy models," which imply that consumers are rational in their decision making and use a version of a weighted sum model to process and use available information. This suggests that consumers assign a probability estimate to the likelihood descriptors (e.g., "rare" = 1% of the time) and severity descriptors (e.g., a "severe" headache feels twice as bad as a "mild" headache) and then form global product evaluations by weighting the disutility of potential outcomes by their subjective probabilities.

The empirical research that exists on how consumers actually interpret risk disclosures in DTC advertisements is sparse and somewhat contradictory. Some studies suggest that product risk disclosures can significantly lower consumers' product evaluations (e.g., Goetzl 2001), recall of

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product benefits (Morris, Mazis, and Brinberg 1989), and product use compliance (Wosinska 2005). Other studies suggest that consumers often ignore risk disclosures (e.g., Menon et al. 2003), and some have even suggested that such risk statements can actually enhance consumers' product evaluations (e.g., Goetzl 2000). More recent research has suggested that consumers subjectively evaluate product risk statements depending on whether statements of product benefits are gain or loss framed (Cox, Cox, and Zimet 2006). However, little is known about the contingencies that govern whether advertised risk disclosures have a negative, neutral, or positive impact on consumer brand attitudes and intentions. The need for research in this area is stressed in an FDA (2004, p. 7) report, which concludes "we have not evaluated how presenting the information in different formats affects consumer comprehension, and we believe that there is much more to be learned before we develop final guidance on how best to inform patients about the drugs being promoted."

To that end, the current research examines how consumers respond to advertised disclosures of drug risks that vary in severity and frequency. Specifically, we address the following questions:

1. How do consumers interpret the "probability language" typically used to describe the likelihood of potential adverse product events (i.e., terms such as "very common" and "very rare")? Do these terms mean the same thing to consumers as they do to advertisers and regulators?
2. What evaluative weight do consumers give to the stated severity of a potential adverse product event versus its stated likelihood (frequency) of occurring? Many models of risky decision making suggest that consumers will (or should) give considerable weight to both severity and likelihood and that these two factors should be combined in forming global product evaluations. Do these models accurately describe consumer evaluations of advertised risk disclosures?
3. Do consumers' responses to product risk disclosures vary depending on the media context in which the product risk message appears? Specifically, how does media-induced mood influence the ways consumers respond to product risk information?

In the following section, we discuss previous research and theory relevant to these questions. Then, we report the results of an experiment that examines these issues empirically. Finally, we discuss the implications of the findings and directions for further research.

Theory and Hypotheses

Consumer Interpretation of Probability Words

Many models of risky decision making (e.g., expectancy–value models; Eagly and Chaiken 1993) posit that consumers weigh information about the likelihood of adverse events in evaluating risky products. However, research indicates that people often have difficulty understanding numerical risk expressions, such as probabilities and percentages (Berry 2004; Kahneman and Tversky 1979; Loewenstein et al. 2001). Thus, most consumer information on product risks (including risk disclosures in DTC drug advertisements) describes the likelihood of adverse events with familiar probability words, such as "rare," "common," and "uncommon."

In the European Union (EU), the European Commission has tried to increase the precision and consistency with which such words are used in product labeling and promotion by providing specific guidelines for translating numerical risk probabilities into probability words (e.g., "very common" side effects occur in >10% of patients, "common" side effects occur in 1%–10% of patients, "uncommon" side effects occur in .1%–1% of patients, "rare" side effects occur in .01%–.1% of patients, and "very rare" side effects occur in <.01% of patients). However, in the United States, the FDA has not issued specific guidelines for use of such terms (Aiken 2009; FDA 2009).

Thus, we conducted research to determine whether there are informal or implicit norms that govern the use of such "frequency words" in U.S. DTC advertising. First, we retrieved current DTC print advertisements for 24 prescription drugs (including the top 10 brands in 2008 DTC expenditures). Second, we extracted from these advertisements every side effect description using any variation of the words "common" or "rare" (e.g., "rare," "rarely occurring," "commonly"). Third, for each side effect, we searched the product's "prescribing information" insert for information on actual incidence rates of that side effect in clinical trials and postmarketing surveillance. Across all 24 brands' advertisements, 126 specific side effects were described as "common," and 15 specific side effects were described as "rare." For 120 of the 126 "common" side effects, we were able to find the numerical incidence of that side effect in clinical trials among patients in both the drug treatment and the placebo conditions. For example, the consumer advertisement for Viagra states that "common side effects for Viagra include ... facial flushing," while the package insert reveals that "flushing" occurs in 10% of clinical trial patients taking Viagra and 1% of patients given a placebo. Overall, the 120 side effects described as "common" in DTC advertising had a median incidence rate of 7.25% among patients taking the drug (M = 9.51%, SD = 7.98), which is roughly 4.0% greater than the 3.3% median incidence rate in the placebo group (M = 4.38%, SD = 4.67%). Both the 7.25% "raw" incidence rate and the 4.0% "incremental" rate are within the 1%–10% range dictated for "common" side effects in the EU.

Incidence data on side effects described as "rare" were more elusive, in part because "rare" side effects often do not emerge in clinical trials (which involve a few thousand patients) but instead emerge during "postmarketing surveillance" of adverse events. Such data are often difficult to obtain and interpret (e.g., because of underreporting). Nonetheless, we were able to glean some norms in drug companies' use of the word "rare." First, drug company regulatory compliance personnel told us that, in general, they feel comfortable describing a side effect as "rare" in an advertisement as long as it is described as "rare" in product labeling (because the FDA has already approved the labeling). Second, we found that many package inserts contain the following statement: "Rare events are those occurring in less than 1/1000 patients" (i.e., <.1%, much like the EU guidelines for "rare" and "very rare"). Finally, the "rare" side effects on which we could find data typically had incidence rates much lower than .1%. For example, advertisements for Cialis describe "sudden hearing loss" as a "rare" side effect. This warning is based (Falco 2007) on the FDA having received 29 reports of sudden hearing loss among users of all erectile dysfunction brands between 1996 and 2006, a period during which 40 million erectile dysfunction prescriptions were written. Even if we assume that these 29 reports represent only 5% of all hearing-loss cases among brand users, the incidence rate would translate into .00145%, or 1 of every 69,000 prescriptions.

In summary, the FDA has no official guidelines for the use of words such as "rare" and "common," but the use of these terms in U.S. DTC advertising appears to adhere to norms that are similar to those prescribed in the EU. However, although words such as "rare" and "common" have fairly consistent numerical meanings to drug marketers, it does not necessarily follow that consumers interpret them in this way (Berry et al. 2003). Research suggests that though such terms are familiar to most consumers, their numerical interpretation varies widely from consumer to consumer (Dhami and Wallsten 2005). Furthermore, research in Europe suggests that the mean (or median) percentages that consumers associate with such terms often depart significantly from what they are intended to convey. For example, although British consumers differentiate between frequency words used in package inserts, they tend to overestimate the likelihood of adverse events described with these words (Berry et al. 2003). In particular, British consumers tend to greatly overestimate the likelihood of adverse events described as "rare" or "very rare."

If similar overestimation is shown to occur among U.S. consumers evaluating DTC messages, this could be a problem because it might cause consumers to unnecessarily forgo potentially beneficial medical products and perhaps expose themselves to even greater risks of product nonuse. Wosinska (2005) uses an econometric analysis of consumer sales data to investigate compliance after exposure to DTC advertisements listing the risks of the cholesterol-reducing drug Lipitor and finds reduced drug compliance among the brand's existing users after the execution of the DTC campaign—an effect the author speculates (but does not test) is caused by these consumers' elevated concern about a "rare but serious side effect" (liver damage) described in the DTC advertisements. The question for U.S. drug marketers is, Will similar frequency misperceptions occur when U.S. consumers evaluate product risk information? Thus, the first hypothesis is as follows:

> H_1: When consumers evaluate information on a potentially risky new product, (a) they tend to overestimate the likelihood of adverse events described as either "very common" or "very rare" (compared with the actual probabilities these terms are typically used to convey in DTC advertising), and (b) their overestimation of the likelihood of an adverse event is most pronounced for events described as "very rare."

Weighing the Severity and Likelihood of Adverse Product Events

Any risk associated with product use has two important dimensions: the severity of the potential adverse event and its likelihood of occurrence. Several accepted models of how health-related information is processed assume that consumers make health care decisions based on a rational evaluation of both frequency and severity. Typically, consumers are assumed to combine severity and frequency in a multiplicative way, forming global evaluations by weighting the severity (or disutility) of potential outcomes by their subjective probabilities. This "rational" view of risky decision making has been formalized with models that predict independent variables' (e.g., attitudes, susceptibility, severity) influence on behavioral intentions in the health belief model (Berry 2004; Rosenstock 1974), the theory of reasoned action (Fishbein and Ajzen 1975), and the heath action process approach (Schwarzer 2001), among others. These models have been used because they are predictive in survey-based correlational studies that evaluate breast self-examination (Moore, Barling, and Hood 1998) and intention to have a Pap smear (Barling and Moore 1996), among other behaviors. These studies imply that consumers can adequately understand and process the presented risk, benefits, and expected outcomes and thus behave rationally in their health care decisions.

However, we believe that under certain circumstances, consumers' actual weighting of severity and likelihood information will deviate markedly from these expected utility models—the perception of risk may be dependent on other elements of the situation. Risk may be evaluated relative to the perceived benefit (Alhakami and Slovic 1994; Finucane et al. 2000) or influenced by the frame in which the message is presented (Cox, Cox, and Zimet 2006). Weinstein (2000, p. 65) notes that "it is surprising that empirical studies of health-protective behavior provide little support for a perceived probability by perceived severity interaction." It may be that both frequency and severity affect the decision process, but it is not a multiplicative relationship, or it may be that there are situational differences that determine the relative impact of frequency and severity.

Furthermore, we expect severity to be a stronger force because research shows that consumers often have a difficult time differentiating levels of probability but can effectively differentiate levels of payoff (Loewenstein et al. 2001). This research suggests that risk severity information has a greater influence on consumers' product use intentions than risk frequency information. However, consumers' evaluations of risk severity and frequency information may vary depending on their prior affective state. We discuss this phenomenon in the next section.

Media Context, Mood, and Product Risk

Media context is an important but understudied aspect of advertising research (Pelsmacker, Geuens, and Anckaert 2002). Although "real-world" ad exposure almost always occurs within a specific media context (i.e., advertisements are embedded in magazines, television programs, and so forth), most audience testing presents advertisements in a "media vacuum," without surrounding program or editorial material. However, evidence indicates that media context can affect audience moods and that media-induced moods can affect how consumers process advertising (e.g., Shapiro, MacInnis, and Park 2002).

Yet the effects of media-induced mood on consumers' responses to product risk information are not obvious. Three competing streams of research posit different processes by which mood influences message evaluation. First, the "mood-as-information" model suggests that consumers use mood as a cue to guide information processing and that positive mood reduces detailed processing (see Schwarz 2001). Second, the "risk-as-feelings" model suggests that risk elicits feelings that determine the active mood state and that these risk-induced feelings influence the decision process (see Slovic et al. 2005). The third stream of research posits that a positive mood actually increases consumers' ability to process, use, and extrapolate from information in making decisions (Isen 2000). In this section, we discuss the competing theories' predictions regarding consumer processing of product risk information.

The mood-as-information model posits that positive-affect consumers interpret their mood to mean that "all is well" and then base stimulus judgments on internal, schema-based knowledge ("top-down" processing) rather than detailed external information. Those in neutral or negative moods interpret their mood to mean that "all is not well" and then tend to process detailed information in the environment through "bottom-up" processing (Bless et al. 1996; Schwarz 2001; Schwarz and Clore 1983). However, the findings in this area have been mixed. While some studies find that positive mood induces reliance on global evaluations rather than detailed data analysis (Bless, Mackie, and Schwarz 1992), other research suggests that positive mood does not decrease processing capacity or motivation (Bless et al. 1996). Indeed, happy people have been shown to engage in detail-oriented, effortful processing in some tasks (Bless et al. 1990; Bless et al. 1996). Fedorikhin and Cole (2004) extend this stream by examining perceived social risk and suggest that positive mood can act as a "prime," activating similarly valenced assessments of risk. In general, both the mood-as-information and the affect-priming models suggest a main effect of mood, in which positive-mood people tend to generate more positive evaluations than neutral-mood people. In addition, the risk-as-information model would predict an interaction, in which the judgments of neutral-mood people (compared with positive-mood people) are more strongly influenced by both severity and frequency information because neutral-mood people are more attuned to the details of the environment.

The risk-as-feelings model suggests that the mood generated by the evaluated risk would supersede any preexisting mood state (Alhakami and Slovic 1994; Lowenstein et al. 2001; Slovic et al. 2005). That is, a risky stimulus is "tagged" with some level of affect that is stored in memory. Then, "[affect] may serve as a cue for many important judgments (including probability judgments)" (Slovic et al. 2005, p. S36) through a mental shortcut called the "affect heuristic" (Finucane et al. 2000). Therefore, regardless of media-induced mood or stated frequency of that side effect, participants would reject a product described as having severe side effects (because it generates negative feelings) and accept a product described as having mild side effects (because it generates more positive feelings). Much of the empirical support for the risk-as-feelings hypothesis relies on either correlational studies or mood manipulations that are contained within the same message that presents the risks and benefits of the underlying activity. Thus, in this research stream, it is difficult to separate the influence of mood from the manipulation of risk.

A third stream of research makes different predictions regarding how mood influences risk processing. This research stream posits that positive moods (compared with neutral moods) increase consumers' ability to discriminate between important, high-stakes risks and more minor, low-stakes risks (Isen and Geva 1987). Therefore, although consumers in positive moods may be more likely to disregard relatively trivial risks than consumers in neutral moods, they may be reluctant to take large, unjustified risks involving "meaningful potential losses" (Nygren, Isen, and Taylor 1996, p. 70). In a sense, consumers in good moods should extrapolate risks to their likely outcomes and evaluate risks in proportion to their relative importance. This theory helps explain these and other findings that are difficult to account for with the mood-as-information, affect-priming, or risk-as-feelings hypotheses.

Isen (2000) posits that this phenomenon may be part of a broader pattern, in which people in positive moods are simply better decision makers (i.e., better able to rationally weigh and integrate information, as well as interpret the logical extensions of that information). Research suggests that positive mood facilitates cognitive flexibility, openness to new information, and the ability to perceive connections among potentially related concepts (e.g., Erez and Isen 2002; Isen and Daubman 1984; Murray et al. 1990; for a review, see Isen 2001). Therefore, this stream of research would predict that people in a positive mood (compared with those in a neutral mood) are more likely to use and interpret all the information in a situation and extend that information to a likely outcome to make a decision.

We designed the current study to test the conflicting predictions of the three streams of mood research by independently manipulating audience mood and risk presentation (i.e., frequency and severity). In this way, we set the opposing hypotheses against one another and expect to find support for the third stream of research. Therefore, we propose hypotheses suggested by this third stream of mood research:

> H_2: Consumers' behavioral intentions are influenced by a three-way interaction among media-induced mood, side effect severity information, and side effect frequency information.
>
> a. Among neutral-mood people, behavioral intentions are influenced by a main effect of severity. Specifically, neutral-mood people will report significantly lower intention to use a product with potential side effects that are severe, regardless of the stated frequency of these side effects.
>
> b. Among positive-mood people, behavioral intentions are influenced by an interaction between frequency and sever-

ity. Specifically, positive-mood people will give relatively little evaluative weight to the severity of side effects described as "very rare" but substantial weight to the severity of side effects described as "very common."

c. Among positive-mood people, the impact of risk frequency and severity information is mediated by inferences about other product attributes (e.g., perceived product efficacy).

Method

Overview

To test these hypotheses, we conducted a randomized, between-subjects experiment, in which a national sample of young adults was exposed to a brief magazine story (intended to manipulate mood), followed by a message for a prescription drug for the early detection of skin cancer. The experiment varied the frequency and severity of the side effects described in the product message and independently varied the mood evoked by the news story. We discuss the development and pretesting of the experimental stimuli and then describe the main experiment. Note that by using a controlled experiment in which mood and risk are independently manipulated, we can separate the influence of mood from the influence of the two manipulated elements of risk to understand how each affects decision making.

Risk Message Stimuli, Pretests, and Interpretation of Risk Probability Words

Risk messages. Five versions of a message were developed for a prescription lotion to detect skin cancer. Each message version had the same picture (a stylized picture of the sun) and headline ("Important News for Young Adults About Skin Cancer"). The body of each message contained basic information about skin cancer (drawn from the American Cancer Society Web site), which was identical for all experimental and control groups. The experimental messages also contained a statement about a potential side effect, which varied in stated frequency (either "very common" or "very rare") and severity (either "a mild headache that lasts for about an hour" or "an extremely severe headache that lasts for several weeks and may require medical treatment to avoid permanent nerve damage"). The control (no side effect) message stated that "there are no side effects to this lotion." (For full wording of the messages, see the Appendix.)

Risk pretest. To assess participant response to the frequency and severity manipulations, we conducted a pretest using a 2 (frequency of side effect: common versus rare) × 2 (severity of side effect: mild versus severe) factorial between-subjects design, with a control (no side effect). We summarize the results of this pretest in Table 1. Pretest participants were recruited from an introductory business class at a large midwestern university. A total of 114 volunteers participated in the pretest and received extra course credit for their participation. Data were collected using paper-and-pencil measures. Each participant was assigned randomly to one of the five target messages and then completed measurement scales to evaluate his or her perceptions of the frequency and severity of the product's side effects. Participants assessed perceived side effect likelihood using three five-point (1 = "strongly disagree," and 5 = "strongly agree") Likert-type scales (i.e., "It is likely that I will experience some side effects of this lotion"; "If I use this lotion, I will probably experience some side effects"; "Most people who use this lotion will experience side effects"). We measured perceived side effect severity with three statements using the same five-point Likert scale (i.e., "The potential side effects of this lotion are very serious," "This lotion has the potential for very severe side effects," and "Using this lotion could lead to very negative consequences"). These scales for perceived likelihood and severity proved to be reliable ($\alpha = .93$, and $\alpha = .95$, respectively).

To test the impact of the manipulations on perceived side effect severity and likelihood, we ran two two-way analyses of variance (ANOVAs). The severity manipulation check showed that perceived severity was influenced solely by a main effect of stated severity ($F_{(1, 109)} = 170.6$, $p < .001$, $\eta^2 = .61$) and no other main or interactive effects. Thus, the severity manipulation appears to be successful and unconfounded. Furthermore, the reported means show that perceived severity is in the expected direction ($M_{severe} = 4.2$, $M_{mild} = 1.7$, $M_{control} = 2.1$), and a Bonferroni post hoc analysis indicated that the severe condition is significantly higher than either the mild or the control at $p < .001$, and the control and mild cell are not statistically different from each other.

The frequency manipulation check showed that perceived side effect likelihood was influenced by a main effect of stated frequency ($F_{(1, 109)} = 43.2$, $p < .001$, $\eta^2 = .284$) in the expected direction ($M_{control} = 2.2$, $M_{rare} = 2.7$, $M_{common} = 4.0$; all *ps* < .05 in Bonferroni pairwise comparisons). Stated severity had no significant main effect on perceived side effect likelihood. However, there was a significant frequency × severity interaction on perceived likelihood ($F_{(1, 109)} = 10.5$, $p = .002$, $\eta^2 = .088$). Frequency descriptors

TABLE 1
Risk Pretest Means (and Standard Deviations)

	Mild Side Effect		**Severe Side Effect**		**No Side Effect**
	"Rare" n = 22	**"Common" n = 25**	**"Rare" n = 23**	**"Common" n = 22**	**Control Group n = 22**
Perceived side effect severity	1.77	1.72	4.28	4.18	2.10
	(.86)	(.56)	(.79)	(1.16)	(1.10)
Perceived side effect likelihood	2.85	3.49	2.52	4.42	2.20
	(1.0)	(.75)	(1.07)	(.71)	(1.05)

(common versus rare) had a stronger effect on perceived likelihood when describing severe side effects than when describing mild side effects. Specifically, perceived side effect likelihood was greater among participants in the common/severe condition ($M = 4.42$) than among those in the common/mild condition ($M = 3.49$; $t = 4.3$, $p < .001$, $\eta^2 = .295$). Although this effect could be viewed as a potential confound, note that pretest participants perceived "very common" side effects as more likely than "very rare" side effects, regardless of whether these side effects were mild ($M_{common/mild} = 3.49$, $M_{rare/mild} = 2.85$; $t = 2.51$, $p = .016$) or severe ($M_{common/severe} = 4.42$, $M_{rare/severe} = 2.52$; $t = 6.97$, $p < .001$). Nonetheless, the main study includes analysis to ensure that these effects do not provide an alternative explanation of the results.

Mood Induction Stimuli and Manipulation Checks

To manipulate media-induced mood independently, we selected several "human interest" news stories from the national press and made subtle modifications to each of these stories to elicit either a positive or a neutral mood. The four stories selected reported on (1) a boy who was rescued after being trapped in a "crane" vending machine, (2) the Soap Box Derby national championship races, (3) the "Click It or Ticket" seat belt campaign, and (4) a teenager's attempt to play on the Ladies Professional Golf Association tour. Two versions of each story were constructed to represent positive and neutral versions by changing a few aspects of each story. For example, the two versions of the golf story described the teenager either winning the tournament (positive mood) or merely participating in the tournament (neutral mood). Eight stories (positive and neutral versions of the four original stories) were developed.

Affect Pretest 1. Fifty-six respondents were recruited from an undergraduate business class at a large midwestern university. Respondents were told that they would be evaluating a short news article and would be asked to report their feelings about the article. Data were collected through a Web survey, in which each participant was randomly assigned to one of the experimental conditions. After participants read their assigned article, they were asked the following:

> Now, we would like for you to answer some questions about your feelings while reading this article. Please think back to the article you just read and think about the feelings and emotions that you experienced during this reading. Please indicate the extent to which you felt each of these feelings.

Then, they evaluated the article on two of Izard's (1977) emotion subscales: happy ("joyful," "happy," "delightful"; $\alpha = .94$) and sad ("sad," "down"; $\alpha = .88$).[1] From this initial pretest, we identified the two stories (golf and seat belt) that exhibited the largest differences between the positive and the neutral versions of each of the two articles. We then subjected these four stories (positive and neutral versions of the golf and seat belt stories) to a second pretest.

Affect Pretest 2. We conducted the second pretest with 148 students (75 females, 73 males) recruited from introductory business classes.[2] Through the Web survey, each participant was randomly assigned to one of the four final article versions. After exposure to the article, participants responded to Izard's (1977) emotion scale; we used summed measures of the happy ($\alpha = .95$) and sad ($\alpha = .89$) subscales to evaluate the mood induced by each article. We conducted a multivariate analysis of variance (MANOVA) with mood manipulation (positive versus neutral) and news article type (golf versus seat belt) as the independent variables and Izard's happy and sad subscales as the dependent measures. As we expected, there was no main or interactive effect of story type ($F_{(1, 144)} < 1.0$, not significant [n.s.]) on either the happy or the sad subscales, suggesting that both of the story topics could be combined in the analysis. In addition, there was no significant effect on the sad subscale for any of the main or interactive comparisons ($F_{(1, 144)} < 1.7$, n.s.). However, there was a significant main effect of the happy subscale for the positive versus neutral conditions ($M_{positive} = 3.35$, $M_{neutral} = 2.89$; $F_{(1, 144)} = 5.74$, $p = .018$). Thus, we deemed the selected news articles to be effective manipulations of media-induced mood.

Method: Main Experiment

To test the hypotheses, we employed a 2 × 2 × 2 between-subjects full factorial experimental design, with a control cell representing no side effects. The factors were media-induced mood (positive versus neutral), product side effect severity (mild versus severe), and product side effect frequency (very rare versus very common). The manipulations of mood, side effect severity, and side effect frequency were identical to those in the pretests.

Participants. Four hundred thirty-four respondents were recruited from a nationwide sample of Internet users (representing 49 different states).[3] The final sample included 93 participants who were in the control cell (i.e., no side effects) and 341 participants who viewed a message that manipulated frequency and severity. The sample was evenly divided by gender (217 females, 216 males). Thirty-eight percent of the respondents were ages 18–28, 23% were ages 29–33, 33.1% were ages 34–38, and 6.5% were age 39 or older. Thus, the majority of participants (more than 94%) fell in the 18–38 age range, which represents "young adults" (i.e., the target audience for the messages). More than 84% had some college or more, 97% had never been diagnosed with skin cancer, and more than 80% did not have an immediate family member who had been diagnosed. Random assignment to cells should have distributed these variables equally across the manipulated cells. To be sure, we ran a chi-square test on each distribution. For all three variables, the values are relatively evenly dispersed across the manipulated cells (i.e., self skin cancer diagnosis, all cells have two or fewer reported cases; family skin cancer diagnosis, $\chi^2 < 1.64$, n.s.; and gender, $\chi^2 < .66$, n.s.). Therefore, the sample is considered nonbiased by gender or history of skin cancer.

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[1] Participants evaluate each mood descriptor word on a five-point scale, where 1 is "not at all" and 5 is "very much so."

[2] All the student samples were collected from different classes, so no student repeated the same study.

[3] The Internet survey sampling company randomly selected the Caucasian American respondents from a panel of nearly 9 million household members, representing more than 3.7 million unique e-mail addresses worldwide. The panel pool is recruited and enrolled using banner advertisements and online recruitment methods, exclusively with permission-based techniques. The sample participants agree to belong only to this online survey pool and no other. The pool is used exclusively for research (not sales) purposes and is monitored to ensure that participants complete no more than four surveys per year. Although the panelists have an intrinsic motivation to be involved in survey research, they are offered small rewards with each survey invitation.

Procedure. For each person who responded to the survey invitation, the first screen on the Web survey presented an introduction to the study. Participants were thanked for their participation and were told the following:

> In a moment, you will be asked to view a short newspaper article and an advertisement for a proposed new product. Please view these as you would normally view articles and advertisements in a newspaper.... After you have read the article and the advertisement, please ... begin the questionnaire. You will be asked to answer some questions about what you have read and your feelings about the product.

After respondents read the introduction and agreed to participate, they were randomly assigned to one of four versions of a human interest story (2 story type × 2 mood level), followed by one of five versions of the target product message (which varied in the frequency and severity of stated side effects [plus control] as developed in the pretests).

Because the experiment included a manipulation of mood in the form of a human interest story, we wanted to ensure that the respondents did not guess the purpose of the study and respond to demand effects. Thus, as a check for potential demand effects, we conducted a postexperimental inquiry with a sample of 51 adult respondents ages 20–39 (recruited from the survey sampling online panel) who did not participate in the main experiment. Each of these respondents completed the entire experimental procedure and then was asked two additional questions: "What do you think is the purpose of this study?" and "What do you think the researchers expect to find from this study?" None of the respondents guessed any of the study's hypotheses. The majority of respondents stated that the researchers were interested in measuring and/or increasing young people's knowledge about skin cancer risk and skin cancer prevention and detection products. Not a single respondent mentioned the role of mood or emotion or made any reference to the mood induction stimulus (i.e., the news article that preceded the product message).

Pooling and Manipulation Checks

Because we used two versions of the "news article," we conducted a pooling test by running a MANOVA with a "story version code" as an independent variable along with the manipulated variables mood, frequency, and severity. We evaluated the results to determine whether they differed by story version (i.e., golf story versus seat belt story). Pooling test results showed no significant results involving story version in the overall MANOVA or on any of the individual dependent variables evaluated in the study. Therefore, we conducted all subsequent analyses with the data pooled across versions.

Perdue and Summers (1986) suggest that manipulation checks are best conducted in a separate pretest rather than being included in the main experiment that examines the dependent variables (e.g., brand attitudes, intentions). They note (p. 319) that "including these checks in the main experiment can present problems independent of whether they come before or after the dependent variable measures." Manipulation checks placed before the dependent measures may bias the latter (e.g., by creating demand effects), while checks placed after the dependent measures may fail to detect stimulus effects that are inherently transient, such as mood inductions (see Vastfjall 2002). Therefore, we relied on the separate pretest studies to test the effects of the mood and risk manipulations.

Measures

We assessed "behavioral intention" (BI) by averaging participants' evaluations on two statements ("How likely would you be to ask your doctor about this product?" and "How likely would you be to purchase this lotion if it were available?") on a seven-point intention scale ranging from "very unlikely" (1) to "very likely" (7). The resulting scale was reliable ($\alpha = .92$).

We assessed "attitude toward product usage" (Att_{usage}) by measuring participants' agreement with four statements adapted from Cox, Cox, and Zimet (2006) ("Overall, I think this lotion is a very good product," "Using this product would be important to me," "People who use this product are safer than those who do not," and "I would rather use this lotion than any currently available alternative") on a five-point scale ranging from "strongly disagree" (1) to "strongly agree" (5). A factor analysis of these four items yielded a single factor, on which each item had a loading greater than .88, which explained 80% of the variance. Thus, we combined the scores on these four items to form a mean measure with coefficient alpha of .92.

We assessed "perceived overall product risk" (Overall Product Risk) by having participants report their agreement (on a five-point Likert scale) with the statement "Overall, this lotion is risky."

We assessed "fear about using the product" (Fear) by having participants report their agreement (on five-point Likert scales) with the statements "Using this lotion would make me worry" and "I would be afraid to use this lotion." The coefficient alpha for this mean scale was .90.

We assessed "belief about product efficacy" (Efficacy) by having respondents report their agreement with the three statements "This lotion is effective in detecting skin cancer," "This lotion works in detecting skin cancer," and "People who use this lotion are less likely to die of skin cancer" (measured on a five-point Likert-type scale). A factor analysis of these three items yielded a single factor, on which each item had a loading greater than .71, which explained 76% of the variance. Thus, we combined participants' scores on these three items to form an averaged measure with a coefficient alpha of .83.

We assessed "perceived vulnerability to skin cancer" (Vulnerability) using the two statements "I worry about getting skin cancer" and "I am fearful that I will get skin cancer at some time in my life." Participants evaluated these on the same five-point "disagree/agree scale" ($\alpha = .94$).

We assessed "perceived barriers to product use" (Barriers) by having participants report their agreement (same "disagree/agree scale") with the four statements "Using this lotion would be inconvenient," "Using this lotion would be embarrassing," "Using this lotion would be too expensive," and "Using this lotion would take too much effort." A factor analysis of these four items yielded a single factor, on which each item had a loading greater than .66, which explained 67% of the variance. Thus, we combined participants' scores on these four items to form an averaged measure with a coefficient alpha of .84.

In addition, we assessed perceived percentage likelihood by asking a single question: "If you, personally, used the lotion, what is the percentage chance that you would experience some side effects? (Please write in the number) ____ %."

Results

Interpretation of Risk Probability Words

We examined consumers' numerical interpretation of the risk language typically used to describe side effects in DTC prescription drug advertisements. In this analysis, we also entered respondents' age category as a factor to determine whether their estimations of a drug's side effect frequency might vary with their overall level of life experience. As we hypothesized, the data replicate previous findings from Europe (e.g., Berry et al. 2003) regarding consumers' interpretation of probability words, such as "rare" or "common." That is, although a side effect described as "very common" is typically used to imply an incidence of approximately 10%, study participants reported their perceived likelihood of "very common" side effects to be 37.9%. Similarly, although "very rare" is typically used to convey an actual side effect incidence of less than .01%, participants estimated their own likelihood of experiencing such side effects to be much higher (M = 29.03%). Thus, while the estimated likelihood of side effects differs significantly between the "very rare" and the "very common" conditions ($F = 4.50$, $p < .035$), participants tend to greatly overestimate the incidence of side effects associated with these verbal descriptors (particularly "very rare") compared with the actual probabilities these terms are typically used to convey. The analysis also indicated that this tendency did not vary significant across respondent age groups. Age did not have a main effect on consumers' estimated probability of experiencing side effects, nor did it moderate the impact of risk descriptors ("very common" versus "very rare") on those perceptions.

Weighing the Severity and Likelihood of Product Risks

As we noted previously, the economic models of risky decision making assume that consumers will (or should) give decision weight to both the frequency and the severity of potential product risks, weighting the severity of potential effects by their respective likelihoods. However, we predicted that consumers' evaluations of overall product risk information in DTC advertisements would deviate markedly from the predictions of such models. To examine these effects, we conducted a MANOVA with frequency and severity as the independent variables and behavioral intention (BI), attitude toward product use ($\text{Att}_{\text{usage}}$), fear of using the product (Fear), and perceived overall product risk (Overall Product Risk) as dependent variables. First, the overall model shows a significant main effect of severity ($F_{(4, 337)} = 22.1$, $p < .001$). Severity had a significant main effect on all the dependent variables in the expected direction: BI ($M_{\text{mild}} = 4.3$ versus $M_{\text{severe}} = 3.0$; $F_{(1, 337)} = 42.2$, $p < .001$), $\text{Att}_{\text{usage}}$ ($M_{\text{mild}} = 3.5$ versus $M_{\text{severe}} = 2.9$; $F_{(1, 337)} = 41.0$, $p < .001$), Fear ($M_{\text{mild}} = 2.5$ versus $M_{\text{severe}} = 3.3$; $F_{(1, 337)} = 63.4$, $p < .001$), and Overall Product Risk ($M_{\text{mild}} = 2.5$ versus $M_{\text{severe}} = 3.3$; $F_{(1, 337)} = 68.3$, $p < .001$). Second, there was no significant main effect of side effect frequency in either the overall MANOVA ($F_{(4, 334)} = 1.0$, $p = .41$) or the ANOVAs of the individual outcome variables (η^2 ranged from .000 to .004). Third, there is no evidence of any frequency × severity interaction either in the overall MANOVA (multivariate $F_{(4, 334)} = .81$, $p = .52$) or on any of the four dependent variables (η^2 ranged from .000 to .004). Thus, in the sample as a whole, the stated severity of a product side effect has a strong influence on consumers' product evaluations and perceived risk, while the stated frequency had no effect (main or interactive) on consumers' product evaluations and intentions. However, as we hypothesized, media-induced mood moderated participants' responses to product risk frequency and severity information. We discuss these effects next.

Consumer Mood and Product Risk Response

In the next analyses, we examine how media-induced mood influences consumers' response to product side effect severity and frequency. We summarize the results of this analysis in Table 2. As H_2 predicted, and contrary to the prediction of the mood-as-information and risk-as-feelings literature, there was no main effect of mood on behavioral intention. However, there was a significant interaction of mood × severity × frequency ($F_{(1, 333)} = 5.34$, $p = .021$, $\eta^2 = .016$).

Among neutral-mood participants, behavioral intention was influenced solely by stated side effect severity ($F_{(1, 171)} = 17.1$, $p < .001$, $\eta^2 = .09$), while stated side effect frequency had neither main ($F = .01$, $p = .92$, $\eta^2 = .000$) nor interactive ($F = .61$, $p = .44$, $\eta^2 = .004$) effects on intentions. Thus, as Figure 1 shows, neutral-mood participants gave essentially the same evaluative weight to the side effect severity regardless of whether the side effect was described as "very rare" or "very common." This finding is consistent with H_{2a} but is contrary to most normative models of risky decision making, suggesting that the utility/disutility of a potential outcome should be weighted by its likelihood of occurrence.

However, among positive-mood participants, there was not only a main effect of stated side effect severity on intention ($F_{(1, 162)} = 26.5$, $p < .001$, $\eta^2 = .14$) but also a significant

TABLE 2
Main Experiment: Cell Means (and Standard Deviations)

	Positive Mood				Neutral Mood			
	Mild Side Effect		Severe Side Effect		Mild Side Effect		Severe Side Effect	
	"Rare" (n = 41)	"Common" (n = 39)	"Rare" (n = 42)	"Common" (n = 44)	"Rare" (n = 39)	"Common" (n = 44)	"Rare" (n = 49)	"Common" (n = 43)
Behavioral intent	4.1 (2.1)	5.2 (1.7)	3.3 (1.9)	2.9 (1.9)	4.2 (1.9)	4.0 (2.1)	2.8 (1.6)	3.0 (1.8)
Attitude toward product usage	3.5 (1.0)	3.8 (.7)	2.8 (.9)	2.8 (.9)	3.4 (.8)	3.3 (1.0)	2.9 (.8)	3.0 (1.0)
Perceived overall product risk	2.5 (1.0)	2.6 (1.0)	3.5 (1.0)	3.5 (1.2)	2.4 (.9)	2.4 (.9)	3.2 (1.0)	3.3 (1.0)
Fear about using product	2.5 (.8)	2.7 (1.0)	3.4 (1.0)	3.5 (1.2)	2.3 (.9)	2.5 (1.0)	3.2 (1.1)	3.3 (1.0)
Perceived product efficacy	3.4 (.8)	3.8 (.8)	3.2 (.7)	3.4 (.8)	3.3 (.8)	3.3 (.9)	3.2 (.6)	3.3 (.8)
Perceived barriers to product use	2.6 (.9)	2.4 (.9)	2.6 (.6)	2.6 (.7)	2.3 (.7)	2.5 (.8)	2.7 (.6)	2.8 (.9)
Perceived % likelihood of side effects	21.1 (30.2)	33.8 (33.3)	38.5 (35.0)	43.3 (33.3)	27.7 (35.6)	33.5 (32.2)	33.8 (32.2)	34.7 (36.5)
Perceived vulnerability to skin cancer	3.3 (1.1)	3.5 (1.2)	3.1 (1.1)	2.8 (1.2)	3.2 (1.2)	3.1 (1.1)	3.2 (1.0)	3.5 (.9)

frequency × severity interaction ($F_{(1,\,162)} = 5.93$, $p = .016$, $\eta^2 = .04$). As Figure 2 shows, positive-mood participants give relatively little weight to the severity of a potential side effect described as "very rare" ($M_{rare/severe} = 3.3$, $M_{rare/mild} = 4.1$; $F_{(1,\,81)} = 3.4$, $p = .07$, $\eta^2 = .04$), but they give substantial weight to the severity of a side effect described as "very common" ($M_{common/severe} = 2.9$, $M_{common/mild} = 5.2$; $F_{(1,\,81)} = 31.3$, $p < .001$, $\eta^2 = .28$). This is consistent both with H_{2b} and with normative models of risky decision making, in which high-probability events are given greater evaluative weight than low-probability events. Figure 2 also reveals that when the product's potential side effects are mild, positive-mood participants actually seem to prefer a product whose mild side effects are described as "very common" ($M_{common/mild} = 5.2$) to one whose side effects are "very rare" ($M_{rare/mild} = 4.1$; $F_{(1,\,78)} = 6.22$, $p = .015$, $\eta^2 = .074$). Thus, H_{2b} is supported, but the exact pattern of effects is particularly noteworthy.

To better understand this pattern of results, we focused on the third stream of mood research discussed previously in this article. This stream predicts that positive-mood people are more open to unique information and are better able to detect connections among potentially related concepts (Isen 2001). Thus, it seems reasonable that a person in a positive mood may use product risk information to make inferences about other product attributes (see Stewart, Folkes, and Martin 2001, pp. 351–52), especially product efficacy or effectiveness (see Ursic 1984). That is, we posit that positive-mood consumers may make the inference that if a product has common (albeit mild) side effects, it must be effective—or what might be called "the Listerine heuristic" (i.e., "if it tastes bad, it must be killing germs"). In this case, "if they put it on the market with common (albeit mild) side effects, it must be effective."

To assess this interpretation, we first examined whether positive-mood participants' judgments of a product's effi-

FIGURE 1
Behavioral Intent Among Neutral-Affect Participants

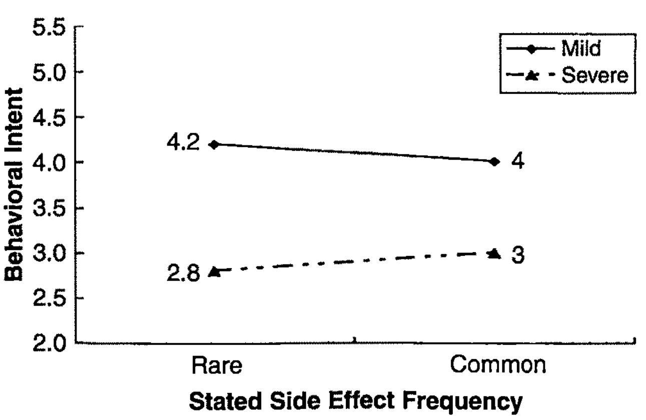
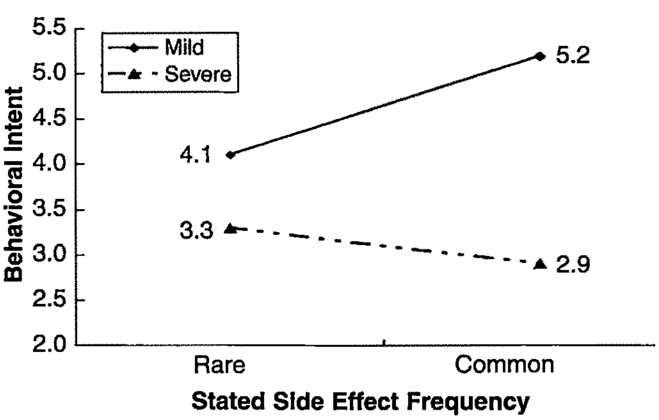


FIGURE 2
Behavioral Intent Among Positive-Affect Participants



cacy are influenced by its side effect frequency. As we predicted, positive-mood participants perceive a product with "very common" side effects as having greater efficacy ($M = 3.59$) than a product with "very mild" side effects ($M = 3.27$; $F_{(1, 162)} = 6.98$, $p < .01$). Among neutral-mood participants, stated side effect frequency has no impact on perceived efficacy ($F_{(1, 171)} = .15$, $p = .70$).

Next, we conducted mediation analysis, examining whether positive-mood participants' preference for a product whose mild side effects are "very common" (versus "very rare") is mediated by perceived product efficacy. We employed Baron and Kenny's (1986) mediation test method, estimating a series of regression models and testing the significance of the (unstandardized) regression coefficients. First, a bivariate regression model confirmed that among positive-mood participants, side effect frequency (common/mild versus rare/mild) had a significant effect on behavioral intention ($B = 1.08$; $t = 2.49$, $p = .015$). Second, a bivariate regression model confirmed that side effect frequency had a significant impact on perceived product efficacy ($B = 1.18$; $t = 2.12$, $p = .037$); that is, positive-mood participants perceived a product with common/mild side effects as more effective than one with rare/mild side effects. Third, we regressed behavioral intention simultaneously on both stated side effect frequency and perceived efficacy. In this model, the proposed mediator (perceived efficacy) has a significant influence on behavioral intention ($B = .51$; $t = 7.77$, $p < .001$), while the effect of the independent variable (side effect frequency) becomes nonsignificant ($B = .47$; $t = 1.41$, $p = .164$). Thus, the regression results satisfy all four of Baron and Kenny's criteria for establishing mediation. As an additional step, we followed Baron and Kenny's further recommendation and tested the statistical significance of the indirect effect of frequency on intention, mediated by perceived efficacy (frequency → perceived efficacy → intention), using the conservative Sobel (1982) test. This test confirmed the significance of the proposed mediated path ($z = 2.04$, $p < .05$).[4]

Thus, higher side effect frequency appears to signal higher product efficacy, and as long as potential side effects are mild, this makes the product more attractive to positive-mood participants. However, when potential side effects are severe, positive-mood participants do not prefer the product with more frequent side effects. Why is this so? Analysis indicates that when side effects are mild, perceived product risk has little influence on behavioral intentions ($r_{BI,risk} = -.15$, $p = .18$). Instead, positive-mood participants' intentions to use a product with mild side effects are driven largely by their beliefs regarding its efficacy ($r_{BI,efficacy} = .68$, $p < .001$). However, when side effects are severe, positive-mood participants' behavioral intentions are more strongly influenced by perceived product risk ($r_{BI,risk} = -.46$, $p < .03$), and efficacy is much less important ($r_{BI,efficacy} = .21$, $p = .054$). Fisher's z-tests (Cohen and Cohen 1983) confirm that the intention/risk correlation is significantly higher when side effects are severe ($r_{BI,risk} = -.46$) than when they are mild ($r_{BI,risk} = -.15$; $z = 2.2$, $p = .028$), while the intention/efficacy correlation is significantly higher when side effects are mild ($r_{BI,efficacy} = .68$) than when they are severe ($r_{BI,efficacy} = .21$; $z = 3.95$, $p < .001$).

Thus, positive-mood participants perceive higher side effect frequency as signaling higher product efficacy, and as long as potential side effects are mild, this greater effectiveness makes the product more attractive. However, if the product's potential side effects are severe (i.e., it can lead to permanent nerve damage), positive-mood participants do not really care how effective it is.

The results suggest that positive-mood participants not only use both frequency and severity information in evaluating the product but also use this information to make inferences about other product attributes (i.e., efficacy), and they employ these inferences in forming their behavioral intentions. Next, we discuss the implications of these findings.

Discussion

Risk disclosure requirements for DTC advertising are predicated on the assumption that consumers appropriately interpret and weigh this risk information to make informed health care choices (Calfee 2002; FDA 2004). However, the question remains as to how and when consumers use the different types of risk information contained in such messages.

This study examines how consumers respond to information about the frequency and severity of product risks and how such responses are moderated by media-induced affect. We find that consumers tend to greatly overestimate the actual likelihood of adverse events described with words such as "common" or "rare" (compared with the probabilities such terms are typically intended to convey) and tend to give little weight to such probability language when forming product use intentions. However, consumers in positive media-induced moods seem to engage in more nuanced evaluation of product risk information, weighing both frequency and severity information and using such information to make inferences about other product attributes (e.g., product efficacy). In the following paragraphs, we explore these findings in greater depth, discussing their possible implications for marketers and public policy makers. We also note some study limitations and suggest directions for further research.

As we noted previously, most models of risky decision making assume that consumers will (or should) give roughly equal weight to hazard severity and frequency. Many such models posit that these two risk dimensions have an interactive effect on consumer product evaluations, such that the severity of a potential product hazard is weighted by its perceived probability. However, we find no significant main effect of frequency and no frequency × severity interaction among neutral-mood participants. Instead, these consumers' behavioral intentions were strongly influenced by a main effect of product side effect severity. Neutral-mood consumers reported much lower intentions to use a product with the potential for a severe side effect, regardless of whether this side effect was described as "very rare" or "very common."

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[4] As an alternative explanation of these results, we examined whether the simple effect of stated side effect frequency (rare versus common) on behavioral intention (BI) was mediated by participants' perceived percentage likelihood of experiencing side effects. However, the data do not support this alternative mediation process. When BI is regressed simultaneously on both stated frequency and perceived side effect likelihood, the proposed mediator (perceived likelihood) has no significant influence on BI ($B = .01$; $t = 1.4$, $p = .165$), while the effect of the independent variable (stated frequency) on BI remains significant ($B = .96$; $t = 2.18$, $p < .05$). Furthermore, a Sobel test reveals that this alternative mediated path (frequency → perceived likelihood → BI) does not approach statistical significance ($z = .13$, $p = .897$). Similar analyses revealed that none of the hypothesized effects of the independent variables on BI were mediated by perceived side effect likelihood.

Although consumers' reluctance to use a product that has any potential to cause severe harm is understandable, the finding that consumers (or at least neutral-mood consumers) give so little weight to information on the likelihood of such harm should be a matter of some concern. It is possible for advertisements for medical products to understate product risks; however, it is also possible for them to overstate them. Because medical products often have important health benefits, such overestimation of risk can endanger consumers' health by deterring use of potentially beneficial products (Stewart, Folkes, and Martin 2001, p. 258). As we noted previously, Wosinska (2005) presents evidence that the risk warnings in Lipitor advertisements caused some heart patients to stop taking the medication, even though the described risk was quite rare. Similarly, some research suggests that FDA "black box" warnings about suicidal thoughts associated with antidepressant use could have actually increased teen suicides by decreasing antidepressant use among depressed adolescents who really needed to be taking the medications (Gibbons et al. 2007). Thus, although there is an understandable push toward more prominent presentation of product risk information in DTC advertisements (FDA 2009), there may be a point beyond which this trend is counterproductive, particularly if consumers disregard information on the (often small) likelihood of the potential adverse event.

However, this study suggests that consumers' processing of product risk information is influenced by media-induced mood. Media-induced mood moderated the effects of product side effect severity and frequency on consumers' behavioral intent. Specifically, consumers in the positive-mood condition were influenced by both frequency and severity information in forming behavioral intent, while those in the neutral-mood condition were influenced only by severity information.

Furthermore, the data suggest that positive-mood consumers' evaluations are driven, at least in part, by inferences about the efficacy of the product. Among positive-mood participants, higher side effect frequency increases perceived product efficacy, and if potential side effects are mild, this makes the product more attractive. However, when potential side effects are severe, positive-mood participants do not prefer the product with more frequent side effects. Further analysis revealed that when side effects are mild, positive-mood participants' product use intentions are driven largely by beliefs regarding product efficacy. However, when side effects are severe, positive-mood participants' behavioral intentions are more strongly influenced by perceived product risk, while efficacy becomes much less important. Thus, positive-mood participants perceive higher side effect frequency as signaling higher product efficacy, and as long as potential side effects are mild, this greater perceived effectiveness increases their intentions to use the product. However, if the product's side effects are severe, positive-mood participants do not really care how effective it is. (By analogy, if a consumer discovers that a Ford Pinto can explode on rear impact, he or she may not really care whether the gas-tank placement increases gas mileage.) In summary, the findings suggest that positive-mood participants not only use both frequency and severity information but also use this information to make inferences about other product attributes (i.e., efficacy) and employ these inferences in forming their behavioral intentions.

These data are consistent with H_2 and are inconsistent with the mood-as-information and risk-as-feelings theories of how mood influences decision making. The mood-as-information theory (see Bless et al. 1996) predicts that positive-mood participants would base their product judgments on their general schema or "activated stereotype" for the broad product category, thus giving little weight to the "specifics of the situation" (i.e., to detailed product attribute information presented in the message). However, we find that positive-mood participants are *more* sensitive to detailed product information presented in the message, weighing information on both side effect frequency and severity and elaborating on this detailed information to make inferences about other product attributes (i.e., efficacy).

Alternatively, the risk-as-feelings literature predicts that the feelings generated by product risk information would overshadow participants' prior mood states, and there would be no significant influence of media-induced mood on the dependent variables. However, the data show an interaction of mood and risk (mood × frequency × severity) with behavioral intent. Thus, the data are most consistent with the predictions of the third stream of mood research we described previously; that is, consumers who are in a media-induced positive mood state (compared with neutral-mood consumers) are more willing to take small risks (mild side effects), particularly when greater efficacy is inferred from the frequency descriptors.

This finding suggests that the positive-mood consumer is more willing to take the presented information and extrapolate it into efficacy implications, while the neutral-mood consumer is focused only on the most salient piece of information presented (i.e., severity) and translates this information into an overall assessment of risk. This result is consistent with the third stream of mood literature we discussed previously, which suggests that consumers in a positive mood are more likely to generate more unusual and diverse first associates (Isen et al. 1985) and to understand metaphors (Roehm and Sternthal 2001).

Implications for Managers and Regulators

The results of this study have several potential implications for both marketers and regulators of risky products, especially products intended to prevent or treat disease. Importantly, this study suggests that consumers make fuller use of product risk information when they are in a positive affective state. Although it is difficult for marketers or policy makers to control the particular mood of a consumer when he or she is evaluating product risk information, it may be possible to influence his or her mood state when processing such information. For example, advertisers might present positive mood induction stimuli (e.g., pleasant images) within the advertisement itself (though such stimuli should be presented before presentation of risk information, not concurrently, to avoid interference with consumer reception of risk information). Alternatively, positive mood induction might be achieved through media placement—that is, by inserting product risk messages within media environments (e.g., specific magazines) that are likely to create a mood conducive to risk-message processing. Some critics of DTC advertising may be alarmed by such recommendations, concluding that such positive mood inductions are designed to make consumers blithely ignore product risk information. However, that is not what we found—again, positive-mood consumers appear to be more attuned to the nuances of product risk information than neutral-mood consumers. Indeed, it might be fruitful for further research to explore whether positive affect enhances the processing of risk information in other, nonadvertising settings (e.g., whether the presence of pleasant, low-stress atmospherics in a clinical setting enhances patients' ability to weigh potential risks and benefits when considering surgery and other medical treatments).

In addition, the results of this study suggest that marketers and regulators need to find more effective ways of communicating the frequency (or likelihood) of potential product risks to consumers. The marketing literature contains excellent research on how the format of product risk information influences consumer awareness of a potential product hazard (e.g., Bettman, Payne, and Staelin 1986; Hoy and Andrews 2004; Stewart, Folks, and Martin 2001). However, much less attention has been paid to communicating the actual frequency with which such adverse events occur. For some products, such frequency communication may not be important. Some products (e.g., household cleansers; Bettman, Payne, and Staelin 1986) have hazards that are avoidable if the product is used as directed, while other products (e.g., tobacco, illegal drugs) are so harmful that risk communicators may not care whether consumers greatly overestimate the risk of adverse events. However, consumers evaluating medical treatments need to weigh the risks of product use carefully against the risks of product nonuse. Without an understanding of relative risk probabilities, consumers may overestimate extremely low-likelihood risks (e.g., a life-threatening drug reaction) and underestimate higher-likelihood events (e.g., getting the disease the drug is intended to prevent). Therefore, it is important that marketers and regulators explore alternative approaches to communicating risk frequency information to consumers.

Limitations and Further Research

This study has several limitations that should be addressed in further research. First, although this study found that positive media-induced affect can alter consumers' responses to product risk information, further research should broaden this line of investigation and examine the potential impact of specific negative media-induced emotions (e.g., anger, fear, sadness) on consumer interpretation of product risk information.

Second, the participants in this study were relatively young adults (a national sample of adults approximately 18–40 years of age, with a median age of about 30). This was an appropriate audience for the messages (young adults are a prime target audience for skin cancer prevention products), and several DTC campaigns target this age group (e.g., the DTC campaign for the human papillomavirus vaccine Gardasil is targeted toward young women and girls). However, it should be noted that many DTC advertisements target older adults suffering from chronic ailments. There may be differences in how older adults process risk information in such messages, both because of age-related information-processing differences and because of older adults' greater direct experience with the risks associated with both diseases and treatments. Therefore, we urge researchers to examine the phenomena studied herein with older adults. More broadly, it would be fruitful for researchers to examine how individual differences other than age (e.g., health literacy, overall risk aversion) may moderate consumer processing of risk frequency and severity information.

Third, as is the case with many marketing communication experiments, this study presented consumers with mes-

APPENDIX
Risk Message Stimuli

Important News for Young Adults about Skin Cancer

Skin cancer is the most common form of cancer among people in their twenties. Every 53 minutes, someone dies of skin cancer. Skin cancer can be hard to see with the naked eye, or may look like a normal mole or freckle.

Fortunately, there is now a medicated lotion which can detect skin cancer. This product is not a sun block or sun screen. It is applied by a doctor to the patient's skin, and creates a gentle reaction which allows the doctor to easily detect the early development of skin cancer. This lotion is highly effective. [There are no side effects of using this lotion].

A [very common/very rare] side effect of using this lotion is a [mild headache that lasts for about an hour/an extremely severe headache that lasts for several weeks and may require medical treatment to avoid permanent nerve damage].

For more information, call 1-800-4CANCER, or talk to your doctor.

sages for a new, unfamiliar product so that they would have no prior information about the product and its risks. Presenting participants with information about existing brands creates some additional complications because the effects of presented information must be untangled from prior brand beliefs and attitudes. However, despite these methodological challenges, researchers could extend this line of research to the study of familiar brands. In particular, it would be useful to examine how the presentation of risk information affects the decision of existing product users to continue (or discontinue) use of the product.

Finally, further research should examine a broad range of approaches for communicating risk frequency information to consumers, including verbal, numerical, and graphical approaches. As we show in this study, verbal communication of risk (using adjectives such as "rare" or "common") is widely used by marketers, but it is problematic. Such words are inherently ambiguous, and lay interpretations of risk terms often deviate dramatically from the intent of risk communicators. Numerical presentations of likelihoods (e.g., odds, percentages, probabilities) have the advantage of greater precision but also present communication problems. Research suggests that many people find percentages and probabilities to be confusing (Berry 2004; Tversky and Kahneman 1981) and uninvolving (Cox and Cox 2001). However, some research suggests that presenting consumers with "natural frequencies" (e.g., "Of every 10,000 people who take this medicine, approximately 30 people will have a seizure") may be clearer than percentages or probabilities (e.g., Slovic, Monohan, and MacGregor 2000). In addition, Schwartz, Woloshin, and Welch (2009) recently showed that placing numerical drug- and placebo-outcome information in a "drug facts box" in DTC advertisements (similar to nutritional labeling on food packaging) can improve consumer understanding of the drug's benefits and risks. Finally, a promising method of overcoming some of these problems may be the graphical presentation of risk likelihoods. Some research suggests that graphical risk presentations can be processed more rapidly (Paivio 1971) and can increase both risk comprehension and intention to adopt risk-reduction behaviors (e.g., Cox et al. 2010). Therefore, further research should examine whether graphical methods improve consumers' ability to assess product risk and efficacy information in DTC advertisements of prescription drugs and other risky products.

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Governance Mechanisms in Business-to-Business Electronic Markets

Rather than relying on traditional relational exchanges, recent technological advances have made it feasible for firms to undertake market-based transactions through information technology–mediated electronic markets. The success of such business-to-business electronic markets depends on the governance practices of the market maker—that is, the firm that manages and administers the electronic market. Market makers use three governance mechanisms to manage electronic markets: (1) monitoring the market participants (i.e., buyers and sellers that participate in the market), (2) building a sense of community among market participants to instill mutual respect and trust, and (3) self-participating in the electronic market to build know-how about how the market functions. Building on transaction cost analysis theory, the authors suggest that the influence of these governance mechanisms on electronic market performance (i.e., meeting strategic and financial objectives) depends on behavioral and external uncertainty in the market. Survey data from market makers show that (1) monitoring is effective for reputed market makers and when demand uncertainty is high, (2) community building is beneficial when pricing is static rather than dynamic, and (3) self-participation is useful when the market maker is well reputed and when the market relies on dynamic pricing.

Keywords: business-to-business marketing, electronic markets, governance mechanisms, performance, uncertainty

Recent advances in communication and information technologies have produced markets based on these technologies for a diverse set of goods and services, such as Virtual Chip Exchange for electronic components and Steel Spider for steel. Transactions that have historically been conducted using relational interfirm exchanges can now be completed through business-to-business (B2B) electronic markets (e.g., Garicano and Kaplan 2001; Grewal, Comer, and Mehta 2001). These electronic markets consist of a market maker that manages the market and the participant firms—namely, buyers and sellers—that transact in it (hereinafter, when we mention electronic markets, we mean B2B electronic markets). The economic significance of B2B electronic commerce, of which electronic markets form a substantial portion, has grown far beyond that of business-to-consumer electronic commerce; U.S. Census Bureau (2009) figures on e-commerce shipments in 2006 attribute 92.5% of them to the B2B side.

The significance of electronic markets has prompted research (e.g., Bakos 1997; Garicano and Kaplan 2001) predominantly focused on developing typologies of electronic markets (e.g., Bakos 1998; Kaplan and Sawhney 2000) and understanding the behaviors of market participants in single markets (e.g., Choudhury, Hartzel, and Konsynski 1998; Grewal, Comer, and Mehta 2001). This concentration on a single market overlooks the role of market makers, which manage electronic markets by laying out and implementing the rules for interactions between buyers and sellers (e.g., Bakos 1998); we detail the functions of the market maker in Table 1.

The market maker's role in facilitating interactions between buyers and sellers requires it to emphasize governance mechanisms that can ensure that market participants are able to participate in a fair manner. The better governed an electronic market is, the higher is the likelihood that it will attract participants and thus improve market performance (conceptualized as meeting strategic and financial objectives). Therefore, we consider two interrelated research questions: (1) What governance mechanisms can the market maker use to improve the electronic market's performance? and (2) How might behavioral uncertainty within the electronic market and external uncertainty mitigate the effectiveness of governance mechanisms?

Research into the effectiveness of governance mechanisms mostly addresses interfirm governance (e.g., Leiblein, Reuer, and Dalsace 2002; Zaheer and Venkatraman 1995; Zollo and Singh 2002) in diverse contexts, including dyadic marketing channels (Brown, Dev, and Lee

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TABLE 1
Functions of Market Makers

Function	Explanation and Examples
Create and manage content	•Create original content oAgriplace, an electronic market for the agriculture community, provides the services of an agronomic expert to participant firms, along with a custom crop planner that enables participant firms to develop fertilizer schedules. •Provide and summarize relevant third-party content oMRO.com, an electronic market for streamline supply chain management related to maintenance, repair, and operating materials provides daily news updates and its own analysis of the news. •Provide links to third-party content. oSpot Metals Online Inc., an electronic market for real-time trading of metals, provides links to the Web sites of its member companies, such as the National Steel Corporation.
Aggregate demand and match buyers and sellers	•Engage in marketing strategies to attract potential exchange partners to the market. •Provide incentives to participating firms to make the market their regular and primary sales channel. •Design standard forms for requests for information and quotes. •Provide security from hackers and viruses. •Facilitate buyers' search for sellers and sellers' search for buyers. •Develop and maintain a payment settlement system.
Manage participant opportunism	•Provide history of the transactions of participant firms. •Rate and evaluate participant firms. •Enforce rules. •Punish rogue participant firms. •Ensure that participant firms comply with legal aspects of contract law.
Price-making process	•Establish the rules for the price-making process. •Maintain and regularly upgrade the systems for real-time auctions and price discovery processes.
Provide secondary services	•Logistics. •Training to participant firms. •Provide credit. •Provide insurance against malpractice for participant firms.

2000), buyer–seller relationships (Wuyts and Geyskens 2005), strategic alliances (Ghosh and John 2005), and interfirm networks (Lorenzoni and Lipparini 1999). We build on this literature, but the focus is on a market-making firm that governs multiple market participant firms, not on a single relationship, such as a buyer trying to manage its seller's opportunism.

Electronic market making can employ three predominant governance mechanisms. First and foremost, a market maker can monitor the behavior of market participants (e.g., Bergen, Dutta, and Walker 1992). Some market makers devise mechanisms to authenticate product representations (e.g., AUCNET; Warbelow and Korkuryo 1989) or track unethical bidding practices (e.g., eBay; Kambil and Van Heck 2002). Second, market makers can build a sense of community among the market participants and use socialization to build interfirm trust as a governance mechanism (e.g., Wathne and Heide 2000). For example, ChemConnect, an electronic market maker for chemicals and plastics, emphasizes collaboration hubs among market participants (www.chemconnect.com).[1] Third, early literature on electronic markets (e.g., Kambil and Van Heck 2002; Malone, Yates, and Benjamin 1994) has noted that a market maker might self-participate in the market as a buyer and/or seller. This self-participation provides a signal that the market maker believes in the electronic market and gives the market maker experiential knowledge about the inner workings of the market, including how direct interactions with participants proceed and how to exert hands-on governance. However, self-participation might offer an unfair advantage to the market maker, which makes and implements the rules that govern the electronic market and therefore must police itself, thus creating a conflict of interest between the market-making and market participant roles.

To study the effectiveness of the three governance mechanisms (monitoring, community building, and self-participation) in B2B electronic markets, we rely on transaction cost analysis (e.g., Krishnan, Martin, and Noorderhaven 2006; Rindfleisch and Heide 1997; Williamson 1985) and suggest that the boundary conditions for the effectiveness of these governance mechanisms depend on uncertainty, whether related to the behaviors of the market makers and participants or external to the electronic market. We use the market maker's reputation to gauge uncertainty related to the market maker; a better reputation should reduce behavioral uncertainty (e.g., Weigelt and Camerer 1988). To identify uncertainty related to participant behavior, we use the price-making mechanism of the electronic market (i.e., static or dynamic pricing); dynamic pricing represents greater participant behavioral uncertainty. Finally, external uncertainty reflects the inability of firms to predict future events (e.g., Milliken 1987), which we theorize may manifest as variability in demand conditions or demand uncertainty (e.g., Dwyer and Welsh 1985). Following research that suggests that knowledge-based firm competencies complement transaction cost considerations (e.g., Poppo and Zenger 1998; Tippins and Sohi 2003), we also use organization learning theory to complement the transaction cost analysis when appropriate.

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[1] Although Wathne and Heide (2000) describe four governance mechanisms, including monitoring and socialization (which we call community building), in general, scholars study only the governance mechanisms that are appropriate for the research context at hand. For example, for their supply chain network context, Wathne and Heide (2004) consider adaptation to uncertainty. Similarly, in the context of restaurants, Srinivasan (2006) views vertical integration and market governance as competing mechanisms. Because we examine a market setting with multiple buyers and sellers, the market maker's use of incentive-alignment systems, such as profit sharing, would not be practical, and selection seems contrary to the spirit of an open marketplace; although *ex post* violators can be asked to leave the marketplace, *ex ante* selection is likely to be impractical.

This research makes several important substantive and theoretical contributions. From a substantive standpoint, we provide the first investigation of a population of electronic markets and offer a generalized understanding of the governance of electronic markets. Because of the economic significance of B2B electronic commerce and the criticality of electronic markets in facilitating this electronic commerce, we cannot overstate the importance of this understanding. Theoretically, we extend the use of transaction cost analysis from a dyadic setting to a market setting, in which a market maker governs transactions among multiple buyers and sellers. We also build on governance literature. Monitoring has been studied extensively in interfirm contexts (e.g., Dahlstrom and Nygaard 1999), and socializing has been discussed in the literature (e.g., Wathne and Heide 2000), though it has not received empirical scrutiny, but self-participation seems to be unique to the electronic market context. We also identify conditions for the effectiveness of the governance mechanisms, in the form of behavioral uncertainty within the electronic market and external uncertainty.

Theoretical Background

Electronic markets comprise several characteristics that make their governance unique and challenging. For example, without face-to-face interactions, electronic markets lack the tangibility and visibility of a physical infrastructure, and the ability for anonymous participation creates questions about the accurate representation of products and trades. Consequently, governance challenges might include establishing rules, laws, and social principles for transactions; ensuring the enforcement of trading commitments; and resolving disputes expeditiously (Kambil and Van Heck 2002). A review of emerging academic literature on electronic markets (e.g., Choudhury, Hartzel, and Konsynski 1998; Kaplan and Sawhney 2000; Varadarajan, Yadav, and Shankar 2008) and marketing literature on governance in interfirm relationships (e.g., Brown, Dev, and Lee 2000; Ghosh and John 2005; Wathne and Heide 2000) suggests three primary governance mechanisms that market makers use to administer electronic markets: monitoring, community building, and self-participation. Building on transaction costs analysis (e.g., Williamson 1985), we also reason that their effectiveness may depend on manifestations of uncertainty about the behaviors of the market maker and market participants (e.g., Rindfleisch and Heide 1997) and uncertainty that is external to the electronic market (e.g., Milliken 1987).

Uncertainty

Behavioral uncertainty: market maker. The market maker's primary responsibility is to bring buyers and sellers together to facilitate their transactions. Because not all of its actions can be transparent to every participant, considerable uncertainty may arise among market participants about the market maker's behaviors. We argue that the extent of this behavioral uncertainty depends on the market maker's reputation.

Reputation refers to the extent to which a market maker is held in high esteem, which we can gauge according to the respect and credibility it garners in the industry (e.g., Weigelt and Camerer 1988; Weiss, Anderson, and MacInnis 1999). Reputation signals the market maker's integrity (Davies and Miles 1998; Dollinger, Golden, and Saxton 1997) and ability (Doney and Cannon 1997; Yoon, Guffey, and Kijewski 1993), as well as its reliability, which should enable it to reduce behavioral uncertainty (Klein and Leffler 1981). Thus, reputation should help a market maker retain the trust of market participants and sustain the electronic market's performance (e.g., Doney and Cannon 1997; Ganesan 1994).

Behavioral uncertainty: market participants. The price-making mechanism of an electronic market determines the nature of its interaction and, thus, the uncertainty market participants feel about the behavior of other participants. Electronic markets usually contain one of two generic price-making mechanisms: static or dynamic (e.g., Kambil and Van Heck 2002). Static pricing occurs when the market maker aggregates the product offerings of multiple vendors and sells them to buyers at a relatively static (fixed) price (e.g., www.testandmeasurement.com); in lead generator markets, in which the market makers derive revenue from advertisements, commissions on sales, or fees for generating qualified sales leads for suppliers (e.g., www.servicemagic.com); and in workflow marketplaces that provide project tracking or collaboration services for complex, iterative, multiparty projects, for which the provider earns a fee (e.g., www.isqft.com). In contrast, dynamic pricing is more common in auctions, in which multiple buyers bid competitively for products from a single supplier (e.g., www.stockshifters.com); in reverse auctions, in which buyers post their needs for products or services and suppliers bid competitively to serve those needs (e.g., www.hedgehog.com); and in two-sided exchanges, in which buyers and sellers interact to exchange information and engage in trade, facilitated by some negotiated dynamic pricing system, such as a bid-and-ask system (e.g., www.xsag.com).

Behavioral uncertainty about market participants should be higher in a dynamic pricing than a static pricing market because, in the latter, the price does not change in real time (though there can be some periodic change), so market participants can be reasonably sure of the price. With dynamic pricing, there is no such pricing guarantee, and the price changes in real time, which offers more scope for opportunistic bidding practices. For example, Jap (2007) shows that buyers use dynamic pricing mechanisms, such as open bidding, to obtain price concessions. Electronic markets, which often allow for anonymity among market participants, enhance this effect; the behavior of other participants is relatively less transparent and more suspicious in dynamic versus static pricing situations.

Demand uncertainty. Demand uncertainty results from unpredictability and volatility in the environment that surrounds the electronic market (e.g., Dwyer and Welsh 1985). This unpredictability and volatility arises as a result of frequent changes in market participants' composition, needs, and behaviors. High turnover of market participants and trouble understanding or anticipating customer needs create uncertainty for the market maker regarding whether its strategies are appropriate for the electronic market.

We summarize our conceptual model in Figure 1. The hypotheses relate the three governance mechanisms (monitoring, community building, and self-participation) to electronic market performance, with the recognition that the effect of a governance mechanism should depend on the extent of uncertainty due to behaviors of the market maker (reputation), behaviors of market participants (price-making mechanism), and demand uncertainty.

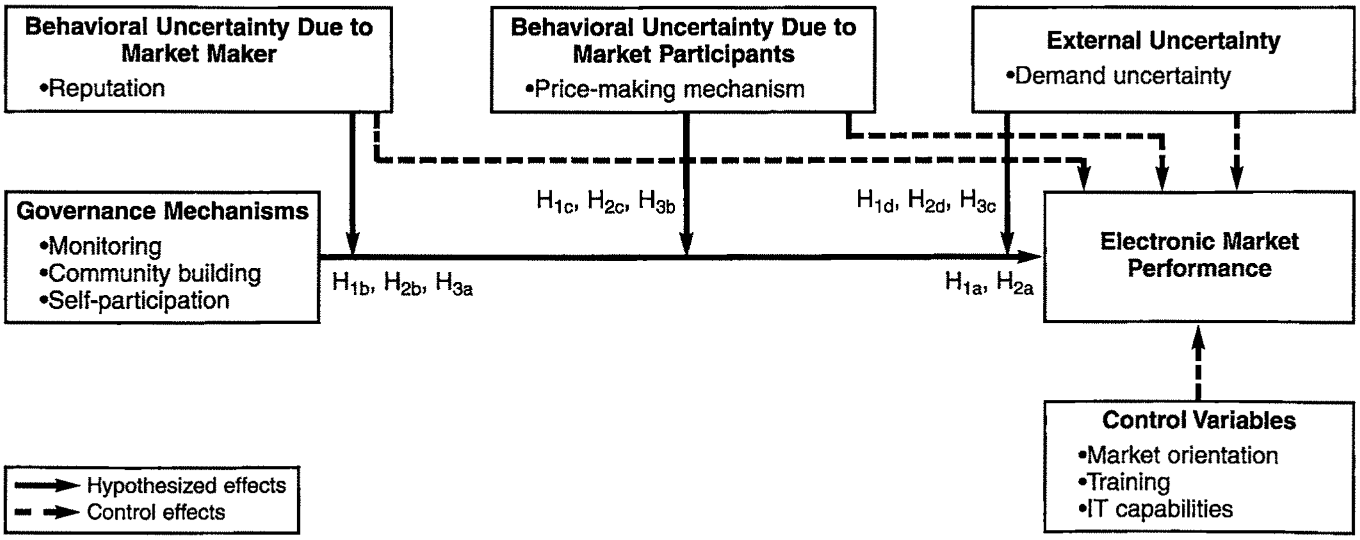
Monitoring

Monitoring refers to the composite activities a market maker undertakes to "police" the electronic market, maintain order and discipline, and ensure that participants abide by its code of conduct rather than act opportunistically. In this setting, opportunistic behaviors include "lying, stealing, cheating, and calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse" (Williamson 1985, p. 47). Many electronic markets use monitoring to improve market governance. For example, AUCNET, the Japanese electronic market for the wholesale trade of used automobiles, employs both full-time and contracted agents to conduct vehicle inspections all over Japan to weed out opportunistic traders (Warbelow and Korkuryo 1989). Virtual Chip Exchange, a leading B2B electronic trading hub for semiconductor chips, monitors all transactions and logistics to ensure quality for market participants. Virtual Chip Exchange restricts membership to qualified original equipment manufacturers, franchised distributors, and chip manufacturers to ensure the reliability of the product source and thereby eliminate some uncertainty (www.virtualchip.com).

Two theoretical reasons support the use of monitoring to reduce malpractices (Wathne and Heide 2000). First, the monitoring process likely creates uncomfortable social pressures to comply with social norms (Murry and Heide 1998). Second, monitoring increases the ability of the market maker to detect opportunism (Wathne and Heide 2000). For market participants to trade effectively, they should feel as if they are part of a market that is routinely monitored for opportunistic behavior. Thus, monitoring should positively influence electronic market performance.

Market maker reputation. Behavioral uncertainty about the market maker should increase as its reputation decreases. We might posit that monitoring effectiveness increases as behavioral uncertainty increases, that is, as the reputation of the market maker decreases. However, because reputation signals a firm's integrity (e.g., Dollinger, Golden, and Saxton 1997) and ability (e.g., Yoon, Guffey, and Kijewski 1993), we contend that this relationship need not hold. Both the source of uncertainty and the remedy for that uncertainty come from the market maker, so one with a poor or unknown reputation (high behavioral uncertainty) may not be considered trustworthy or able to monitor other market participants, which would severely discredit its monitoring efforts (Ganesan 1994; Gatignon, Anderson, and Helsen 1989). Furthermore, effective monitoring practices tend to be inconspicuous, but if the market maker's

FIGURE 1
Hypothesized Model



reputation is low, its monitoring efforts may be perceived as impertinent and meddlesome. In summary, we expect the effectiveness of monitoring for electronic market performance to increase as the reputation of the market maker increases.

Price-making mechanism. The effectiveness of monitoring efforts also may be greater when the price-making mechanism is dynamic (high market participant behavioral uncertainty) rather than static (low market participant behavioral uncertainty). Dynamic pricing induces more participant opportunism than static pricing because market participants can resort to problematic practices, such as collusion and shilling in dynamic pricing settings (Kambil and Van Heck 2002). For example, in auction markets, buyer-side collusion occurs when two bidders illegally team up to enter a low and a high bid and then later withdraw the high bid so that the sale goes to the low-bid collaborator. Sellers use shells that enter fake bids to drive the price higher. With the static pricing mechanism, participant pricing instead is fixed and transparent, leaving little room for irregularities, so investments in monitoring routines may not add value. The greater probability of unfair and surreptitious bidding activities in dynamic pricing markets creates higher payoffs from monitoring efforts designed to curb such activities. Therefore, monitoring mechanisms should be more effective under dynamic pricing than static pricing because they discover, prevent, and correct opportunistic behavior as it occurs.

Demand uncertainty. The effectiveness of monitoring efforts for electronic market performance should increase as demand uncertainty increases (e.g., Bergen, Dutta, and Walker 1992). The effects of demand uncertainty are ubiquitous, such that firms are rewarded (penalized) for (in)effective and (in)efficient managerial practices in dynamic environments (e.g., Aldrich 1979). When demand uncertainty is high, monitoring efforts to accumulate, assimilate, interpret, and use participant information to anticipate changing environmental conditions should yield higher rewards (e.g., Jaworski and Kohli 1993). However, when demand uncertainty is low, participant composition and behavior is predictable, and monitoring does not yield much new information about participants or their behaviors. Therefore, with low demand uncertainty, monitoring efforts may not add any value to electronic market performance.

H_1: Monitoring as a governance mechanism is (a) positively associated with electronic market performance, and its effectiveness increases (b) as the reputation of the market maker increases, (c) in dynamic rather than static price-making mechanisms, and (d) as demand uncertainty increases.

Community Building

Community building refers to the totality of effort exerted by the market maker to create a congenial market environment for participants, which consists of high levels of mutual trust, integrity, and honesty exhibited by participants. Because electronic markets primarily comprise corporate participants that trade big-ticket items, such as capital goods and industrial services (Malone, Yates, and Benjamin 1994), cultivating trust and integrity may take priority over other community values, such as conviviality (which is critical in interpersonal online communities; see Miller, Fabian, and Lin 2009). For example, VertMarkets operates 58 industry-specific electronic markets (e.g., PlasticsNet, SemiconductorOnline) and encourages membership in its community of buyers and sellers by offering benefits such as a downloadable library of white papers, access to trade associations, and industry event calendars (www.plasticsnet.com; www.semiconductoronline.com). PrintCities, a worldwide electronic market for printing equipment, emphasizes building a community for participants by offering an independently moderated technology forum that users can access at any time (www.printcities.com).

From a theoretical standpoint, community-building efforts represent the market maker's attempt to create embedded social relationships that help mitigate the risks associated with opportunistic behaviors by market participants (e.g., Granovetter 1985; Kaufman, Jayachandran, and Rose 2006). By emphasizing trust among market participants, community building ultimately enables bilateral relationships in an electronic market. Because these effects can have positive ramifications with regard to greater market acceptance and usage, we expect community building to influence electronic market performance positively.

Market maker reputation. The effectiveness of the market maker's community-building efforts should increase with its reputation. Community-building efforts attempt to foster trust through informal relationships among market participants, and research among small groups suggests that for entities to benefit from informal relationships, they must be willing to engage with one another (Caniels and Romijin 2003). In addition, social identity research suggests that a group member's readiness to participate in new relationships depends on whether the group can form a salient social identity (Brewer and Gardner 1996). We contend that community building should be more effective when the market maker's reputation is stronger because this strong reputation, unlike a poor reputation, provides a salient social identity for market participants: They are a community managed by a credible, legitimate, and valued entity. Similarly, the characteristics of a prominent entity in small organizations create the context for participants to find common grounds for their interactions (Tjosvold and Weicker 1993). However, a market maker's poor reputation should induce concern about its behaviors, which attenuates any of its efforts to maintain the community.

Price-making mechanism. Community building should be more effective in dynamic pricing settings than in static pricing ones. Dynamic pricing creates uncertainty about the final price, and some buyers may even be uncertain about the identity of the seller. These inherent uncertainties provide incentives for unfair bidding practices, such as collusion and shilling (Kambil and Van Heck 2002). Community building instead emphasizes fair practices and should lessen market participants' incentives to engage in opportunistic bidding behaviors. In contrast, community building offers no value for static pricing markets, because the supplier information, including pricing, is available all the time, such as in a catalog. The what-you-see-is-what-you-get nature of the market enables participants to assess suppliers in advance and reduces participant apprehension about potential trading partners. Furthermore, the inherent transparency of static pricing makes community-building efforts redundant; all relevant market participant behaviors appear in the public domain.

Demand uncertainty. We argue that the effectiveness of community-building efforts for electronic market performance should increase as demand uncertainty increases. High demand uncertainty, in contrast with low demand uncertainty, implies that participants join and leave the electronic market frequently and exhibit widely varying needs and behaviors. Podolny (1993) shows that in turbulent environments, markets develop a social character, in the sense that organizations search for trading partners with whom they have interacted or transacted before. In an uncertain market context, optimal exchange partners cannot be determined easily, so firms engage in "satisficing"; that is, they search for partners who are good enough because their preferences are similar (Levitt and March 1988). In this case, the community-building efforts by the market maker provide ideal opportunities for informal interactions, which facilitate the search for appropriate transaction partners. By providing trade association memberships, invitations to industry events, or informal networks (Bakos 1997), market makers also give participants the tools to search for partners they might prefer, facilitate their transactions, and calm the market. In contrast, the value of community building may be redundant when demand uncertainty declines, considering the high predictability and stability of the participant composition and behavior in such markets.

> H_2: Community building as a governance mechanism is (a) positively associated with electronic market performance, and its effectiveness increases (b) as the reputation of the market maker increases, (c) in dynamic rather than static price-making mechanisms, and (d) as demand uncertainty increases.

Self-Participation

When the market maker participates in the electronic market, it experiences the impact of its rules on its own transaction productivity. It also can interact directly with other market participants. In essence, self-participation provides the market maker a unique opportunity to evaluate the market from both its own perspective and that of a market participant. Such an opportunity may be valuable to all parties, which is the primary goal of governance in an electronic market (Ghosh and John 1999). Therefore, various market makers choose to govern through self-participation, including Converge in electronic component distribution (www.converge.com), Exostar in aerospace (www.exostar.com), and Quadrem in procurement services (www.quadrem.com).

However, the direct impact of self-participation on market performance is debatable. On the one hand, self-participation can be an effective governance tool because it encourages tacit learning about the inner workings of the market and signals the market maker's confidence in the orderly state of its own market. By participating, the market maker makes transaction-specific investments of its time and information (e.g., Ganesan 1994), so it has a high stake in ensuring that all other participants play by the rules. On the other hand, self-participation may be less effective as a governance mechanism if market participants perceive it solely as an opportunity for the market maker to take advantage of its dual role as market maker and market participant (e.g., Malone, Yates, and Benjamin 1994). The market maker might seem to manipulate the market rules to benefit its own transactions; such concerns among market participants may undermine the purpose of self-participation. Therefore, we suggest that the effectiveness of self-participation as a governance mechanism depends on the prevailing behavioral and external uncertainties in the market.

Market maker reputation. The effectiveness of self-participation for electronic market performance should increase as the market maker's reputation increases. If the general perception of the market maker is of a reputable and honest entity, its experiential knowledge, ability to understand signals of wrongdoing, and style of hands-on governance should induce more credence than the possibility of the market maker acting out of self-interest. In contrast, a market maker with a poor reputation cannot govern effectively through self-participation, because participants are likely to question its intent continually.

Price-making mechanism. Self-participation effectiveness should increase for dynamic versus static pricing. When the price-making mechanism is dynamic, market participants can take advantage of the flexibility of the pricing process to undercut one another and deceive counterparties (Jap 2007). Detecting opportunistic practices in price negotiations and bids is difficult because of the anonymity participants generally retain at the time of trading, as well as the information asymmetry between the trading entities (Kambil and Van Heck 2002). In the presence of high behavioral uncertainty about other market participants, each participant necessarily relies on the market maker to maintain order. As a participant, the market maker signals its competence to detect patterns of improper pricing behavior and to take punitive actions. It also may be harmed itself by opportunistic price-making behavior, so its self-participation may be construed as a personal incentive to ensure order. In addition, in its administrative role, the market maker should realize the general marketplace behavior exhibited by the participants. Such information, as a complement of the market maker's experience and interactions as a participant, can make self-participation a powerful tool when behavioral uncertainty about market participants is high because of a dynamic price-making mechanism.

Demand uncertainty. The effectiveness of the market maker's self-participation increases as demand uncertainty decreases. In a context of high versus low demand uncertainty, market makers must cope with volatile participant needs and rapid turnover. Self-participation endows the market maker with knowledge gained from actual interactions with the participants in the electronic market. We believe that demand uncertainty determines the extent to which this acquired knowledge generalizes to all participants, and generalizability should be higher in low-demand-uncertainty environments than in high-demand-uncertainty environments because the variability in needs across participants is lower. Thus, the market maker's limited comprehension and learning about the changing demand characteristics of market participants in a high-demand-uncertainty environment should allow for more opportunities for market participants to engage in unethical transaction behaviors than in low-demand-uncertainty environments.[2]

> H_3: The effectiveness of self-participation as a governance mechanism for electronic market performance is greater (a) as the reputation of the market maker increases, (b) in dynamic rather than static price-making mechanisms, and (c) as demand uncertainty decreases.

Method

Sampling Frame

Perhaps because of their relative newness, a comprehensive list of B2B electronic markets is unavailable, so we created a sampling frame that includes the maximum number of B2B electronic markets available at the time of data collection. An initial Internet search provided one publicly available mailing list, the knowledge base of the online magazine *Net Market Makers*, which consists of various B2B e-commerce players, including market makers, infrastructure providers, and industry-sponsored markets (listed by Jupiter Media Matrix). For this research, the market makers and industry-sponsored markets (e.g., Covisint in the automobile industry) form the initial sampling frame. In addition, we supplement the list of 364 potential respondents with 168 market makers identified by SG Cowen (1999) in one of the first industry reports, as well as with market maker lists obtained through Web searches (primarily b2b.yahoo.com) and markets noted by popular infrastructure providers (e.g., Ariba, Commerce One, i2). Consequently, the list grew to 572 B2B electronic markets.[3]

Next, we visited the Web sites of each market to qualify the market makers and obtain and update contact information. This qualification exercise led to the deletion of firms that were not market makers but for some reason appeared on the list (e.g., www.grainger.com). We also attempted to snowball; that is, during the process of identifying key respondents, we asked each potential respondent to name two to three electronic markets in his or her industry. Usually, the markets they named already appeared in the sampling frame, so this exercise also served as a validation check of comprehensiveness. Constructing the sampling frame elucidated the dynamic nature of B2B electronic markets; some markets had gone out of business (e.g., www.chemdex.com), and others were being revised (e.g., www.covisint.com). Some electronic markets even shut down during the period of data collection (e.g., www.esteel. com). In the end, the sampling frame consisted of 428 B2B electronic markets.

Data Collection Procedure and Key Respondent Identification

Initially, we contacted market makers by telephone to obtain the name and designation of a key respondent, a top manager involved in strategic decision making regarding the electronic market. In most cases, the key respondents were chief executive officers, founders, or vice presidents. During the telephone call, we attempted to talk with the key respondent and, if possible, explain the purpose of the study, as well as remind him or her that the questionnaire would arrive in a week's time. We also queried these respondents about their ability to answer the questionnaire and stressed the criticality of their responses, with the promise of an executive summary of the findings as an added incentive. To snowball and test the extensiveness of the sampling frame, we asked about other possible electronic markets. If the key respondent was unavailable during the first telephone call, we made two more attempts to talk to him or her, usually in the next seven to ten days. In most cases, we were able to talk to or obtain the name and title of the key respondent.

The survey packet consisted of a cover letter on university letterhead, the questionnaire, a self-addressed and prepaid return envelope, and an incentive of $1. The cover letter stated that the data were being collected to investigate the management and efficacy of electronic markets and promised a copy of the findings as an incentive to participate. Three weeks after mailing the surveys, we mailed reminder letters with another copy of the questionnaire and self-addressed and prepaid return envelopes to nonrespondents. In the follow-up letter, we reiterated the criticality of responding and again promised a copy of the findings. This data collection exercise resulted in 114 responses (26.6% response rate), 107 of which were complete and usable.

Measures

Consistent with contemporary measurement theory, we used multiple items to measure each latent construct. Whenever possible, we used established scales (i.e., electronic market performance and demand uncertainty), but some constructs (i.e., monitoring, community building, self-participation, reputation, and price-making mechanism) are new measures (see the Appendix). For the new constructs, we generated a pool of items through field interviews and then refined them in two steps. First, two doctoral students trained in psychometric theory filled out the preliminary research instrument to identify ambiguous items. Second, two e-commerce consultants from a leading consulting firm critically evaluated the research instrument with regard to the scale items and flow.

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[2] The learning process we postulated for self-participation under dynamic pricing is unlikely to resolve demand uncertainty. In the context of dynamic pricing, a self-participating marker maker learns about the subtleties of price setting and negotiating, which helps improve its knowledge of not only the price-making mechanism but also the opportunistic behaviors of market participants. However, demand uncertainty is manifest because of the wide range (beyond pricing behaviors) of expectations across existing and potential participants (who may be involved with a competing electronic market or not be participating in any electronic market). Thus, learning from self-participation is likely to be of limited utility for managing demand uncertainty.

[3] An electronic market serves as the unit of analysis. In some cases, one firm maintained multiple marketplaces (e.g., VerticalNet with 58, Ventro with 4), so we asked the market maker to complete a questionnaire for each market; however, these market makers agreed to complete only one. Consistent with prior research (e.g., Murry and Heide 1998), we asked the multiple market makers to complete the questionnaire with respect to a typical market.

To measure monitoring, we assessed the market maker's efforts to ensure that participants do not take advantage of other participants, methods for handling complaints about opportunistic behavior by market participants, emphasis on policing, stress on maintaining order, and emphasis on discipline in the market. The community-building measure assessed the market maker's efforts to create a sense of community among participant firms, to build trust, and to create a congenial atmosphere. The measure of the market maker's self-participation relied on a dummy variable that took a value of 1 if the market maker transacted in the electronic market, whether as a buyer or a seller, and 0 if otherwise.

The measure for reputation assessed the image of the market maker in the industry. In addition to a direct measure, the items determined whether the market maker was perceived as respectful and as possessing integrity, as well as the extent to which the market maker's opinions were sought and valued. The price-making mechanism dummy variable equaled 1 if the electronic market was an auction, reverse auction, or an exchange, which implies a dynamic market; otherwise, the pricing mechanism was static and took a value of 0.

We controlled for the market maker's market orientation, or the extent to which the firm understands its customers and competitors (Kirca, Jayachandran, and Bearden 2005), which positively influences firm performance (e.g., Jaworski and Kohli 1993; Narver and Slater 1990). We also controlled for the training capabilities of the market maker. The newness and idiosyncrasies of electronic markets suggest that the training the market maker provides about how to participate in the market should influence market performance. Because the very genesis of electronic markets relies on advances in information technology (IT) (e.g., Grewal, Comer, and Mehta 2001), the extent of IT capabilities of the market maker should be important for market performance. Thus, we controlled for the IT capabilities of the market maker, measured as a second-order construct consisting of IT infrastructure and IT skills (e.g., Bharadwaj 2000).

Measure Validation

To validate and purify the measures, we used composite reliability to assess the internal consistency and confirmatory factor analysis (CFA) models to assess the unidimensionality and discriminant validity (e.g., Anderson and Gerbing 1988). To maintain a healthy ratio of the sample size to the number of parameters estimated, similar to previous studies, we estimated three CFA models, in which the constructs of each are maximally similar to provide a stringent test of discriminant validity. In general, each model shows statistically significant factor loadings ($p < .01$) and fit indexes close to or above recommended levels (see Table 2). For the discriminant validity, we assessed whether the estimated measurement error-corrected correlation parameters for each set of constructs are significantly different from 1.0 (Anderson and Gerbing 1988); because none are, we establish discriminant validity. A comparison of early and late respondents on all variables indicates that both are similar ($p > .10$), which signals that nonresponse bias is not likely an issue. We also took two steps to alleviate common method concerns, namely, questionnaire design and statistical testing (Podsakoff et al. 2003). First, in terms of questionnaire design, we employed several subsections, so respondents needed to pause and read the instructions for each section of questions. Within and across the sections, we also used different response formats.[4] For example, in addition to seven-point Likert rating scales ("agree/disagree"), we used "unsatisfactory/satisfactory" scales and multiple-choice options (e.g., price-making mechanism). Second, we used Harmon's single-factor test to assess common method bias. Using exploratory factor analysis, we estimated a model with all items for the seven latent constructs (i.e., monitoring, community building, reputation, demand uncertainty, market orientation, training, and IT capabili-

TABLE 2
Results from CFA Models

Measurement Model	Range of Standardized Factor Loadings	CFA Index	Tucker–Lewis Index	RMSEA	χ^2 (d.f., p-Value)
Monitoring, community building, reputation, training, IT skills, and IT infrastructure	.59–.87	.96	.95	.06	543.86 (335, $p < .01$)
Electronic market performance, demand uncertainty, market orientation, IT skills, and IT infrastructure	.57–.85	.96	.95	.06	828.16 (499, $p < .01$)
IT capability (second order)[a]	.68–.85	.97	.94	.08[b]	155.79 (76, $p < .01$)

[a]Both IT skills and IT infrastructure load positively on IT capability (IT infrastructure $\gamma_1 = 1.21$, t = 13.25, $p < .001$; IT skills $\gamma_2 = 1.19$, t = 13.68, $p < .001$).
[b]The root mean square error of approximation (RMSEA) values in all three CFAs are less than or equal to .08, which is well within the prescribed range for a reasonable fit for continuous data items (Schreiber et al. 2006). A more stringent RMSEA cutoff at .05 tends to reject properly specified models when sample sizes are close to 100 (Yu 2002).

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[4] We changed the response formats for independent constructs only. However, changing the response formats between dependent and independent constructs might have better alleviated concerns about common method variance.

ties). The rotated factor-loading matrix for the seven-factor solution indicates that the items for the different constructs load on different latent factors (though IT infrastructure and IT skills load on the same factor), which minimizes common method concerns. We averaged the items to create single indicators for the latent constructs; we provide the descriptive statistics in Table 3.

Model Estimation

Because we consider moderating hypotheses, we created interaction terms by multiplying the mean-centered explanatory variables (i.e., governance mechanisms) with the mean-centered moderating variables (i.e., uncertainty variables). The mean-centering increases the interpretability of the main effects of the explanatory variables; the main effects are the effects of the explanatory variables on the dependent variables when the moderator is at its mean value of 0.

The continuous dependent variable (electronic market performance) prompts us to use an ordinary least squares regression to test the hypotheses. However, endogenous self-selection could influence the reputation variable. That is, market makers with poor reputations could have self-selected themselves out of responding to the survey, in which case the close relationship between reputation and electronic market performance might be an artifact of the exclusion of poorly reputed market makers from the sample (e.g., Ferguson, Deephouse, and Ferguson 2000; Roberts and Dowling 2002).[5] To correct for this self-selection bias, we followed the specific steps that Garen (1984) prescribes. First, we regressed reputation on several constructs and obtained the predicted error:

$$z = \Delta x + \vartheta, \tag{1}$$

where z is reputation, which is a continuous construct; X is the matrix of predictors; Δ is the matrix of coefficients; and ϑ is the standard error term. Second, we used IT capabilities, market orientation, training, and dynamic uncertainty as predictors of reputation.[6] Third, we estimated the main regression model by introducing additional terms to the hypothesized regression models (Garen 1984):

$$y = R\beta + \alpha_{\vartheta}\hat{\vartheta} + \alpha_{\vartheta z}\hat{\vartheta}z + \varepsilon, \tag{2}$$

where y is electronic market performance; R is the matrix of independent variables used in the regression models in Table 3; β, α_{ϑ}, and $\alpha_{\vartheta z}$ are coefficients to be estimated, with α_{ϑ} equal to the coefficient of the estimated error term from Equation 1 and $\alpha_{\vartheta z}$ equal to the coefficient for the product of the estimated error from Equation 1 and the reputation variable; $\hat{\vartheta}$ is the estimated error term from Equation 1; and ε is the standard error term. The coefficients estimated in Equation 2 using ordinary least squares are statistically inefficient because of heteroskedasticity in the error term, for which we use White's (1980) correction.

Results

Model Selection and Robustness Assessment

For the explanatory variables, including the interaction terms, the variance inflation factors (highest value is 6.28, below the recommended cutoff of 10.00) and the condition indexes (highest value is 8.23, well below the recommended cutoff of 30.00) indicate that multicollinearity is not an issue (e.g., Mason and Perreault 1991). As we show in Table 4, the independent variables together explain a statistically significant amount of variance in market performance (R^2 = .54, $p < .01$). Despite the high R-square value, we attempt to assess the robustness of the results by comparing the hypothesized model (M_{HYP}) with three submodels in which

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[5] We thank an anonymous reviewer for pointing out this issue and the potential solution to us.

[6] We use several combinations of predictors, as available in the survey. The final regression results in Equation 2 remain consistent. The correction terms include both the predicted error from Equation 1 and the product of the predicted error and the reputation variable. Garen (1984) prescribes such an approach because the self-selection bias correction is conditional on the value of the reputation variable, so the correction will differ for every value of the reputation variable.

TABLE 3
Descriptive Statistics

	PER	MON	CB	SP	REP	PM	DU	MO	TRN	ITC
Electronic market performance (PER)										
Monitoring (MON)	.17[a]									
Community building (CB)	.25**	.46**								
Self-participation (SP)	.21*	–.06	.00							
Reputation (REP)	.39**	.13	.19*	.12						
Price-making mechanism (PM)	.14	–.06	.12	.15	.09					
Demand uncertainty (DU)	–.17	.11	.17	–.02	–.01	–.11				
Market orientation (MO)	.35**	.31**	.39**	–.01	.44**	.06	.04			
Training (TRN)	.36**	.11	.08	.18	.17*	.04	–.09	.32**		
IT capability (ITC)	.23*	.16*	.10	–.07	.32*	.00	.09	.21*	.16	
M	4.25	4.12	4.16	.26	5.68	.62	4.42	4.92	4.72	5.44
SD	1.36	1.33	1.95	.44	.94	.48	.94	1.12	1.18	.99

*$p < .05$.
**$p < .01$.
[a] Two-tailed tests for bivariate correlations.

only monitoring (M_{MON}), only community building (M_{CB}), or only self-participation (M_{SP}) appears as a single governance construct. The likelihood ratio tests reveal that M_{HYP} outperforms all three submodels (M_{MON} $\chi^2_6 = 3.68$, $p < .01$; M_{CB} $\chi^2_6 = 4.51$, $p < .01$; M_{SP} $\chi^2_6 = 4.37$, $p < .01$). In terms of statistical significance, the results do not change across the four models.[7]

Hypotheses Testing

The main effect of monitoring is not statistically significant ($b_{MON} = -.07$, $p > .19$). Although we do not find support for H_{1a}, the results indicate support for H_{1b}, which posits that the effectiveness of monitoring for electronic market performance increases with the reputation of the market maker ($b_{MON \times REP} = .24$, $p < .01$; see Table 4). We conduct a slope analysis to investigate this result (see Table 5) and find that when the market maker's reputation is strong, the effect of monitoring on market performance is positive ($b_{MON \times REPhigh} = .36$, $p < .05$), but when that reputation is poor, the effect of monitoring is negative ($b_{MON \times REPlow} = -.44$, $p < .05$). We must reject H_{1c} because the interaction of monitoring with the price-making mechanism is not statistically significant ($b_{MON \times PM} = .05$, $p > .92$). However, the results support H_{1d} for the interaction between monitoring and demand uncertainty ($b_{MON \times DU} = .10$, $p < .05$). A slope analysis shows that at low levels of demand uncertainty, monitoring leads to a deterioration of market performance ($b_{MON \times DUlow} = -.27$, $p < .01$), but monitoring has a positive effect when demand uncertainty is high ($b_{MON \times DUhigh} = .13$, $p < .05$; Table 5).

The results for H_2 are similarly mixed. We find support for H_{2a}; that is, community building has a positive main effect on electronic market performance ($b_{CB} = .34$, $p < .01$). However, the effect of community building on market performance does not increase with the reputation of the market maker ($b_{CB \times REP} = .02$, $p > .29$), and the interaction between community building and the price-making mechanism is opposite the effect we hypothesized. That is, the effectiveness of community building is greater for static pricing than for dynamic pricing ($b_{COM \times PM} = -.32$, $p < .05$), and the slope analysis confirms that community building has a positive and statistically significant effect only in static pricing conditions ($b_{COM \times PMstatic} = .34$, $p < .01$; $b_{COM \times PMdyn} = .02$, $p > .51$). We also do not find support for H_{2d}, because community building is not more effective in conditions of high rather than low demand uncertainty ($b_{CB \times DU} = .04$, $p > .57$).

Consistent with H_{3a}, the results suggest that the effect of self-participation on market performance increases with the reputation of the market maker ($b_{SP \times REP} = .41$, $p < .05$). The slope analysis reveals that highly reputed market makers can effectively use their self-participation as a governance mechanism ($b_{SP \times REPhigh} = .42$, $p < .05$), whereas market makers with poor reputations cannot ($b_{SP \times REPlow} = -.89$, $p < .01$). We also find support for H_{3b}; the interaction between self-participation and the price-making mechanism is statistically significant ($b_{SP \times PM} = .68$, $p < .05$). From the slope analysis for this interaction effect, we determine that when the price-making mechanism is dynamic, the effect of self-participation is positive and statistically significant ($b_{SP \times PMdyn} = .61$, $p < .05$), but when the pricing mechanism is static, the effect of self-participation is not statistically significant ($b_{SP \times PMstat} = -.07$, $p > .67$). In support of H_{3c}, the impact of the market maker's self-participation decreases as demand uncertainty increases ($b_{SP \times DU} = -.33$, $p < .05$), and the slope analysis suggests that with high demand uncertainty, self-participation is ineffective as a governance mechanism ($b_{SP \times DUhigh} = -.69$, $p < .01$), whereas at low levels of demand uncertainty, its effect is not statistically significant ($b_{SP \times DUlow} = .55$, $p > .19$).

Discussion

Recognizing the growing importance of electronic markets for consummating B2B transactions, we attempt to advance extant research on electronic markets by focusing on the role of the market maker as a facilitator of trade. Our specific focus centers on the effectiveness of the governance mechanisms that the market maker might use to govern the market. We rely on transaction cost analysis and organizational learning theory to suggest that the effectiveness of three governance mechanisms should depend on behavioral and external demand uncertainties in the market (e.g., Williamson 1985).

The results from the survey data demonstrate the boundary conditions for the effectiveness of the three governance mechanisms we consider. Monitoring market participants seems to be effective when the market maker is reputable and demand uncertainty in the external environment is high. However, we find no difference in the effectiveness of monitoring in alternative price-making scenarios. Perhaps with dynamic pricing, the range of possible bidding behaviors makes monitoring too difficult, whereas in a static pricing setting, the monitoring efforts are rendered redundant with the open and transparent fixed pricing system.

In contrast, community building, which is a cultural governance mechanism (rather than a bureaucratic governance mechanism such as monitoring; Jaeger and Baliga 1985), is effective in most conditions, as the statistically significant main effect suggests. Contrary to the hypothesis, however, the effectiveness of community building is most pronounced in electronic markets with static pricing. It seems that the inherent transparency of static pricing makes community-building efforts effective because all relevant market participant information appears in the public domain and the buyers can select the sellers they prefer, whereas dynamic pricing relies on the price-making process to match buyers and sellers. Some static pricing electronic market formats, such as workflow marketplaces, bring multiple parties together for collaborative projects and thus, by their very nature, may be more amenable to community building.

Furthermore, the effectiveness of community building is not bound by the market maker's reputation. We had reasoned that reputation would boost community-building efforts; however, the results seem to suggest that regardless

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[7] For hypothesized effects, we use one-tailed tests of statistical significance. Considering the small sample size (107 electronic markets), in addition to tests of significance at $p < .01$ and .05, we report tests of statistical significance at $p < .10$.

TABLE 4
Regression Results

			Estimation with Correction for Self-Selection Bias			
Class of Variable	**Covariate**	**Hypothesized Effect**	**Model M_{MON}**	**Model M_{CB}**	**Model M_{SP}**	**Model M_{HYP}**
	Constant		3.59*** (.16)	3.74*** (.17)	3.87*** (.20)	3.76*** (.17)
Behavioral uncertainty due to market maker	Reputation (REP)[a]		.38*** (.15)	.30*** (.16)	.26 (.18)	.32*** (.15)
Behavioral uncertainty due to market participants	Price-making mechanism (PM)		.43*** (.18)	.27 (.19)	.11 (.24)	.19 (.22)
Demand uncertainty	Demand uncertainty (DU)		–.39*** (.10)	–.34*** (.10)	–.25*** (.12)	–.23*** (.11)
Monitoring (MON) as a governance mechanism	MON	Positive	.01 (.11)	–.04 (.09)	–.05 (.09)	–.07 (.09)
	MON × REP	Positive	.25*** (.09)			.24*** (.12)
	MON × PM	Positive	–.06 (.13)			.05 (.14)
	MON × DU	Positive	.14*** (.07)			.10** (.06)
Community building (CB) as a governance mechanism	CB	Positive	.16** (.09)	.36*** (.12)	.23*** (.09)	.34*** (.11)
	CB × REP	Positive		.07 (.12)		.02 (.14)
	CB × PM	Positive		–.33** (.19)		–.32** (.19)
	CB × DU	Positive		.02 (.08)		.04 (.08)
Self-participation (SP) as a governance mechanism	SP	No direct effect	.18 (.19)	.13 (.19)	–.09 (.29)	–.07 (.27)
	SP × REP	Positive			.41** (.21)	.41** (.23)
	SP × PM	Positive			.53* (.38)	.68** (.39)
	SP × DU	Negative			–.36** (.21)	–.33** (.17)
Control variables	Market orientation		.01 (.11)	.03 (.11)	.04 (.11)	.02 (.11)
	IT capabilities		.07 (.10)	.11 (.11)	.09 (.11)	.10 (.10)
	Training		.37*** (.07)	.37*** (.07)	.33*** (.07)	.42*** (.08)
Self-selection variables	$\hat{\vartheta}$		.19** (.10)	.21** (.11)	.21** (.11)	.20** (.11)
	$\hat{\vartheta} \times z$		.13 (.10)	.07 (.08)	.05 (.08)	.16** (.09)
Model fit statistics	R^2		.50	.46	.47	.54
	Adjusted R^2		.42	.38	.39	.44
	F-statistic		6.64***	5.75***	5.98***	5.15***

*$p < .10$.
**$p < .05$.
***$p < .01$.

[a] We report the regression coefficient with standard errors in parentheses. Consistent with extant paradigms, for the hypothesized effects, we report one-tailed tests for statistical significance. We estimate M_{MON}, M_{CB}, M_{SP}, and M_{HYP} using ordinary least squares and find that all results remain unchanged except for the interactions between monitoring and demand uncertainty in models M_{MON} and M_{HYP} and the self-participation and demand uncertainty interaction in model M_{HYP}. For the self-selection variables, z denotes reputation, which we consider a potential source of self-selection bias.

Notes: A positive coefficient of $\hat{\vartheta}$ indicates that we have controlled for an upward bias of electronic market performance due to the preponderance of high reputed market makers in the sample. A positive coefficient of $\hat{\vartheta}z$ indicates that we have controlled for an upward bias of electronic market performance due to the range of high reputation levels.

TABLE 5
Slope Analysis of Hypothesized Moderating Effects

	Dependent Variable: Electronic Market Performance					
	Low Reputation	High Reputation	Static Price-Making Mechanism	Dynamic Price-Making Mechanism	Low Demand Uncertainty	High Demand Uncertainty
Slope for monitoring	–.44* (.25)	.36* (.21)	–.07 (.19)	–.02 (.03)	–.27** (.13)	.13* (.07)
Slope for community building	.34[a] (.22)	.35 (.63)	.34** (.17)	.02 (.02)	.29 (.73)	.32 (.29)
Slope for self-participation	–.89** (.42)	.42* (.23)	–.07 (.51)	.61* (.32)	.55 (.59)	–.69** (.32)

*$p < .05$.
**$p < .01$.
[a] Consistent with extant paradigms, for the hypothesized effects, we report one-tailed tests for statistical significance.

of the market maker's reputation, a community that has reached a particular level continues to provide returns to participants. Nor does demand uncertainty make a difference for the influence of community building on market performance. Demand uncertainty may increase the emphasis on organizational information-processing capabilities and, thus, economic-oriented governance mechanisms rather than social mechanisms (i.e., similar to the motivation dichotomy of the differential emphasis on efficiency versus legitimacy motives; Grewal, Comer, and Mehta 2001).

Finally, self-participation is a unique governance mechanism for electronic markets that arises from the potential dual role of the market maker. The findings suggest that self-participation as a governance mechanism should be emphasized when the market maker enjoys a high reputation and when dynamic pricing mechanisms appear in the market (Table 5). In contrast, self-participation is not effective when the market maker's reputation is poor and demand uncertainty is high (Table 5).

These findings highlight two important recommendations for the governance of electronic markets. First, the three governance mechanisms are differentially effective under different sources of uncertainty, which implies that the conditions a market maker faces should determine the governance mechanisms it uses. Second, community building has received a great deal of press, but its role in B2B electronic markets may be limited. Community building is effective for electronic markets with static pricing mechanisms, so it could be employed effectively by catalog aggregators, lead generators, and workflow markets. Furthermore, the main effect of community building is positive and statistically significant, which means that it is equally beneficial regardless of whether the market maker is reputable or whether demand uncertainty is high or low. Perhaps community building plays a greater role for business-to-consumer and consumer-to-consumer electronic markets and for social interaction Web sites; this issue demands further research.[8]

Theoretical Implications

Before discussing the crucial theoretical implications of this research, we acknowledge some limitations. First, we use a cross-sectional survey design, and all the limitations of this research approach are pertinent here. Because of the evolving nature of electronic markets (i.e., technology, market participants, and competing markets), a cross-sectional snapshot might mask some important variables and insights. Longitudinal studies could add significantly to the findings. Second, because market makers typically are small entrepreneurial firms, historical data on them remain rather limited. We conceptualize demand uncertainty only from the market maker's point of view, but it also may stem from variability in demand in the buyer's or seller's industry. The effects of demand uncertainty from such alternative sources could differ. Third, because of the lack of measurement options for the performance of electronic markets (most are privately held), we use only self-reported measures for the dependent variable. Nonetheless, because we rely on important practitioner and academic literature from strategic marketing and transaction cost analysis research to develop the hypotheses, this study provides significant theoretical and practical insights and represents an important initial step toward building a theory of electronic market making.

The primary theoretical contribution lies in the explanation of electronic market performance across a population of electronic markets; we take some initial steps toward determining how successful market making works. Previous empirical research on electronic markets has concentrated on one market at a time (e.g., Grewal, Comer, and Mehta 2001), but it has overlooked the roles and challenges of market makers. We believe that the current research paves the way for further research into electronic market making that can uncover boundary conditions other than uncertainty, such as structural factors (e.g., concentrated versus dispersed markets), participant switching costs, or the proportion of revenue derived from the electronic market. These variables capture variance in market participants' dependence on the electronic market for their operations, which may be effective indicators of their asset specificity. Additional research should also address market participant and market maker opportunism as constructs that could mediate the relationship between governance mechanisms and electronic market performance.[9]

We contribute to governance literature in marketing (e.g., Wathne and Heide 2000) by theorizing about the relevant governance mechanisms for B2B electronic markets. The online electronic market space allows for the use of multiple governance mechanisms, whether bureaucratic (monitoring), cultural (community building), or participatory (self-participation). In this realm, we identify the ambient conditions that become manifest in response to behavioral uncertainty on the part of the market maker and market participants and to external demand uncertainty to identify potential boundary conditions on the effectiveness of the governance mechanisms. To the best of our knowledge, this is the only marketing study that empirically examines the effectiveness of community building while also considering self-participation as a governance mechanism that seems unique to electronic markets.

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[8] For example, eBay has successfully created the world's largest Web-based community of consumer-to-consumer auctions, which establishes high switching costs and enhances user loyalty. The Web-based music retailer lala.com has created a community of music listeners that complements its pay-per-download business model.

[9] We thank an anonymous reviewer for suggesting opportunism testing as a direction for further research.

We also conceptualize new constructs for community building and self-participation, develop a valid and reliable measure for community building, and identify a way to capture self-participation and price-making mechanisms through nominal measurement. The community-building construct is applicable across different contexts and therefore could serve to assess efforts to build esprit de corps among a dealer network of an industrial organization, for example.

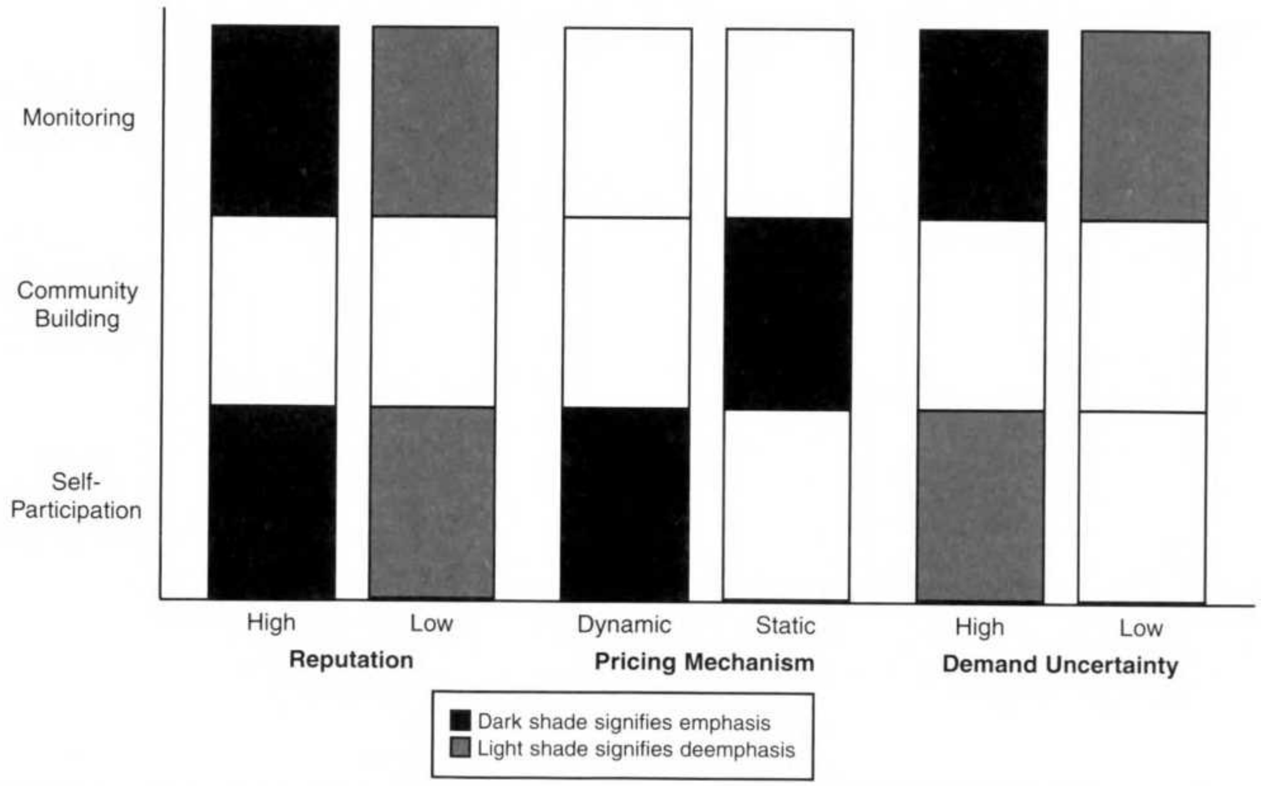
Managerial Implications

Depending on the source of perceived uncertainty in their markets, market makers can choose to emphasize (or deemphasize) the governance mechanisms of monitoring, community building, and self-participation, as we illustrate in Figure 2. When demand uncertainty is high, market makers should emphasize monitoring because it helps fill information gaps about participant composition, expectations, and behaviors. In contrast, when demand uncertainty is low, few information gaps exist, so monitoring is ineffective. Self-participation offers few benefits in high-demand-uncertainty conditions; rather, it harms the electronic market's performance. Because of frequent changes in the participants and their behavior in dynamic environments, opportunistic behaviors may slip through the cracks, considering the bounded rationality of self-participating market makers. However, participant opportunism can be addressed by emphasizing monitoring.

In dynamic pricing electronic markets, it pays to emphasize self-participation because the market maker has a stake in reducing uncertainty for both itself and others. Self-participation also enables the market maker to experience uncertainty by partaking in dynamic pricing activities (e.g., auctions) while allowing for corrective action through its market maker role. However, with static pricing, an emphasis on community building better improves electronic market performance because its inherent transparency reveals all participant attributes and actions.

When market makers have a strong reputation, they can use both monitoring and self-participation to enhance electronic market performance. Well-reputed market makers also can appear unobtrusive in their monitoring because they enjoy credibility and trust among participants. Well-reputed self-participating firms probably do not provoke

FIGURE 2
Governance Mechanisms and Behavioral and External Uncertainty



concerns about self-interest-seeking behaviors; monitoring and self-participation are likely to be viewed as legitimate policing actions. In contrast, if nonreputable market makers adopt monitoring and self-participation, it hurts the bottom line. Monitoring comes across as overbearing, and self-participation appears ethically questionable. Community building also may work for reputable market makers; the coefficients of the slopes of community building across reputation conditions are all reasonable (see Table 5).

Because the three governance mechanisms are differentially effective under different aspects of behavioral and external uncertainty, market makers should recognize how each can be developed, implemented, and maintained in the context of electronic markets. For example, monitoring efforts require investments to develop supervisory routines, as well as technology that can accumulate and analyze participant behavior data, provide instant reporting of trading anomalies, and establish a responsive complaint management system. To build communities, market makers need at least two channels of communication and feedback: a bilateral channel between the market maker and individual participants and a network channel among participants. Community building also involves the effective communication of market norms through newsletters, e-mail messages, chat rooms, and message boards. Finally, self-participation requires the market maker to be able to balance trading skills and market-making skills and to manage risk. To avoid surprises, self-participation requires the full disclosure of the market maker's role in the electronic market.

Conclusion

Market making requires an effective infrastructure for exchange, the regulation of participant behavior, and steady governance that takes into account the uncertainty in the market. Electronic markets, the new frontier in market making, create both governance challenges and opportunities for market makers. The key challenge is to govern under uncertainty in the virtual environment. The opportunity lies in the freedom to create a market for any product or service, global or local, as long as market makers make the right decisions about when to monitor, when to build a community, and when to self-participate.

APPENDIX
Measures

Item	Item Description
Electronic Market Performance	
Please use the scale below to rate aspects of the performance of your electronic market[a] (ρ_c = .96):[b]	•Return on investment relative to objective. •Sales relative to objective. •Profits relative to objective. •Growth relative to objectives. •Market share relative to objective. •Market acceptance. •General success.
Monitoring	
How much do you agree or disagree with the following statements in describing the management of your Electronic Market? (new scale) (ρ_c = .87):	•We monitor the electronic market closely to make sure that the participating firms do not take advantage of other participating firms. •We take the complaints of opportunistic behavior on the part of user firms seriously. •We believe that one of the primary roles of market makers of an electronic market is to police the market. •It is important for market makers to maintain order in their electronic markets. •We lay heavy emphasis on our disciplining role as a market maker.
Community Building	
How much do you agree or disagree with the following statements in describing the management of your Electronic Market? (new scale) (ρ_c = .72):	•We expend a lot of effort to build trust among firms participating in our electronic market. •Creating a congenial atmosphere in the electronic market is one of our primary goals. •Building a sense of community among the firms participating in our electronic market is an important goal for us.
Self-Participation	
The market maker (or firm that owns the electronic market) transacts in the market as either a buyer or a seller. For example, Covisint is a self-participating electronic market, as a co-owner Ford participates in the market, whereas ESTEEL is an unbiased electronic market. Please check the statement that most accurately describes the OPERATING status of the ELECTRONIC MARKET you manage:	______ The market maker (or one of the firms that owns the electronic market) transacts in the market as a buyer or seller. ______ The market maker maintains neutrality and does not transact in the electronic market.

APPENDIX
Continued

Item	Item Description
Reputation How much do you agree or disagree with the following statements about the image of your Electronic Market Maker in the industry? (new scale) ($\rho_c = .86$):	•We have a good reputation in the industry. •Our opinion is valued in the industry. •We are perceived as a firm with high level of integrity in the industry. •Firms in the industry respect us. •Our current customers seek our opinion out.
Price-Making Mechanism Please check the statement that most accurately categorizes the nature of your electronic market:[c]	•*Catalog Aggregator*: The market maker aggregates catalogs (product offerings) of multiple vendors and sells to buyers at a relatively static (fixed) price. •*Auction*: Multiple buyers bid competitively for products from a single supplier. •*Reverse Auction*: Buyers post their needs for products or services and suppliers bid competitively to fulfill the needs. •*Exchange*: A two-sided electronic market where buyers and sellers interact to exchange information and engage in trade, facilitated through some negotiated dynamic pricing system (such as a bid and ask system). •*Lead Generator*: A seller driven electronic market, where the market maker derives revenue from advertisements, commission on sales, or fees for generating qualified sales leads for suppliers (sellers). •*Workflow Marketplace*: Provides project tracking or collaboration services for complex, iterative, multiparty projects (such as in construction) and charges fees for its services. •*Other*: Describe.
Demand Uncertainty Please indicate your agreement with the following statements concerning the environment of your electronic market (adapted from Grewal, Comer, and Mehta 2001) ($\rho_c = .77$):	•Our customer demands vary a lot. •A lot of user firms join and/or leave our electronic market. •We are often surprised by our customers' behavior. •The environment can be characterized as dynamic.
Market Orientation The statements below describe norms that operate in business. Please indicate the extent of your agreement about how well the statements describe the actual norms in your market-making operations (business). Note: "Customers" refers to buyers and/or sellers in the electronic market, whichever is (are) relevant (adapted from Deshpandé and Farley 1998) ($\rho_c = .90$):	•Our business objectives are driven primarily for customer satisfaction.[d] •We constantly monitor our level of commitment and orientation to serving customer needs. •We freely communicate information about our successful and unsuccessful customer experiences across all business functions. •Our strategy for competitive advantage is based on understanding our customers' needs.[d] •We measure customer satisfaction systematically and frequently. •We have routine and regular measures of customer satisfaction. •We are more customer-focused than our competitors. •We believe that this business exists primarily to serve customers.[d] •We poll end users at least once a year to assess the quality of our products and services. •Data on customer satisfaction is disseminated at all levels, to the concerned constituents for our electronic market's operations, on a regular basis.
Training How much do you agree or disagree with the following statements about your role in the Electronic Market? (new scale) ($\rho_c = .88$):	•The training we offer satisfies the user firms. •We offer an adequate level of technical support to firms participating in our electronic market. •User firms have many opportunities for participating in training sessions. •The level of technical support we offer satisfies the user firms. •We are perceived as being technologically competent.[d]
IT Infrastructure Please circle the number that most accurately describes the information technology resources of your organization (new scale) ($\rho_c = .91$):	•We have strong IT planning capabilities. •We have extensively invested in building our IT infrastructure. •We have a good understanding of possible benefits of IT applications. •We have compatible IT platforms across business functions. •Our strategy heavily emphasizes the strategic importance of IT. •We have a state-of-the-art IT infrastructure. •We regularly update our IT assets.

APPENDIX
Continued

Item	Item Description
IT Skills	
Please circle the number that most accurately describes human information technology resources of your organization (new scale) ($\rho_c = .92$):	•Is experienced with IT. •We have strong technical IT skills. •We have adequate knowledge about IT. •Our IT skills are comparable with the best in the industry. •We invest heavily in our IT human resources. •We have adequate managerial IT skills.

[a] Similar measures are common in marketing literature (see Grewal and Tansuhaj 2001).

[b] All items are measured on seven-point semantic differential scales (1 = "unsatisfactory," and 7 = "satisfactory").

[c] The price-making mechanism is a dummy variable coded as 1 if the electronic market is dynamic (i.e., an auction, reverse auction, or an exchange) and 0 if the electronic market is static (i.e., catalog aggregator, lead generator, and workflow marketplace).

[d] Item was deleted after CFA.

Notes: We report composite scale reliabilities according to the formula $\rho_c = [(\Sigma\lambda_i)^2 var(\xi)]/[(\Sigma\lambda_i)^2 var(\xi) + \Sigma\theta_{ii}]$ (Bagozzi and Yi 1988), and the covariance matrix is the input matrix. We measured all items on seven-point semantic differential scales (1 = "disagree," and 7 = "agree") unless otherwise indicated.

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Rita Di Mascio

The Service Models of Frontline Employees

Service literature has implicitly assumed that frontline employees (FLEs) share a common understanding of the term "customer service." Perhaps because of this assumption, differences in FLE attitudes, behaviors, and performance have been ascribed to organizational characteristics, social environment, job characteristics, or personality. This article shows that FLEs' interpretations of customer service also matter. Using qualitative and quantitative data, this study finds that three distinct interpretations of customer service, or service models, exist among retail FLEs: (1) the act of giving customers what they ask for, efficiently and courteously; (2) a means to accomplishing immediate objectives, such as sales quotas; and (3) the formation of mutually beneficial relationships with customers through problem solving. Service models are related to FLEs' customer orientation, competence, surface and deep acting, and interpersonal values. The findings indicate that differences in FLEs' attitudes, behaviors, and performance can arise from their keeping of different service models; illuminate individual-level beliefs underlying service typologies, such as goods- and service-dominant logic; and suggest that FLE recruitment and training should take service models into account.

Keywords: frontline employees, customer service, customer orientation, competence, interpersonal theory

Frontline employees (FLEs) play a pivotal role in face-to-face service encounters because they can affect customer perceptions of service quality, satisfaction, and value (e.g., Brady and Cronin 2001). For this reason, service literature has been interested in the factors that influence the attitudes and behaviors of these employees and has examined the influence of organizational characteristics (e.g., Babakus et al. 2003), social environment (e.g., Sergeant and Frenkel 2000), global perceptions of the job (e.g., Singh 2000), and personality (e.g., Hurley 1998). This literature implicitly assumes that FLEs have a common interpretation of what customer service is and thus has overlooked the potential for divergent interpretations.

This oversight of FLE interpretations of customer service is grievous. Employees doing the same kind of work may frame the work quite differently, leading to different work behaviors (Wrzesniewski and Dutton 2001). This article shows that three distinct interpretations of customer service, or service models, exist among FLEs: (1) the act of giving customers what they ask for, efficiently and courteously; (2) a means to accomplishing immediate objectives, such as sales quotas; and (3) the formation of mutually beneficial relationships with customers through problem solving. It also shows that these service models are related to customer orientation, competence, and interpersonal values. The findings provide a deeper understanding of how differences in FLE attitudes, behaviors, and performance can arise from FLEs subscribing to different service models; illuminate individual-level beliefs underlying service typologies, such as goods- and service-dominant logic; and suggest that FLE recruitment and training should take service models into account. Overall, this research answers Kennedy, Lassk, and Goolsby's (2002) call for an increased understanding of employee beliefs that underpin an organization's customer-oriented culture.

Literature Review

Perceptions of job and work environment can influence an FLE's attitudes, behaviors, and performance at work (e.g., Sergeant and Frenkel 2000; Singh 2000). This influence can be explained by schema theory, which posits that people actively construe aspects of their environment (e.g., events, people, concepts) through the use of schemas—cognitive structures that represent knowledge about concepts or types of stimuli, including their attributes and the relationships among those attributes (Fiske and Taylor 1991, p. 98). Schemas act as implicit guidelines for organizing and shaping interpretations of organizational phenomena and the meanings ascribed to them (Weick 1979). The different forms of understanding phenomena have been referred to with various terms, such as "conception," "schemata," and "frame" (Renstrom, Andersson, and Marton 1990); this article uses the term "model."

Schemas also guide the actions that people take in response to framing (Bartunek 1984; Daft and Weick 1984). That is, how people frame their work influences their work behavior (Wrzesniewski and Dutton 2001). For example, hospital cleaners who view their work as highly skilled and significant to patient healing engage with patients and visitors, do extra tasks, and time their work to enhance the medical unit's work flow, whereas those who view their

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work as unskilled and no more than cleaning minimize their interaction with patients and visitors and avoid tasks outside their job description (Dutton, Debebe, and Wrzesniewski 2000). Therefore, FLEs' understanding of customer service is critical to how they carry out their work; yet because it is abstract and defies absolute definition, this understanding is susceptible to varied interpretation.

Little has been written about cognitive models of customer service, though cognitive models of other marketing phenomena have been studied (e.g., Clark and Montgomery 1999). An exception is a study exploring service researchers' interpretations of "service" (Edvardsson, Gustafsson, and Roos 2005) that reveals several distinct ways of defining service, including (1) executing an activity, such as a deed, effort, or process, and (2) providing a customer benefit, such as an experience or satisfaction of needs. Another study (Beatty et al. 1996, p. 231) captures, albeit unintentionally, how some FLEs interpret customer service, noting that successful sales associates consistently "talked about 'taking on customer problems' as their own or 'untangling customers' lives.'" It is plausible that those associates' descriptions are their own interpretations of customer service. However, these two studies only partially illuminate the meaning of customer service among FLEs because, as Edvardsson, Gustafsson, and Roos (2005, p. 118) find with "service," meaning "depends on who is portraying the service." Thus, interpretations are likely to differ between service employees and researchers and between highly and moderately successful FLEs, simply because of differences in their knowledge and experience.

At first glance, there may appear to be myriad possible service models because they are idiosyncratic, but a limited number of models is likely for three reasons. First is the discovery of a limited number of interpretations of work in other domains, such as arbitration (Shore 1966), medicine (Sawa 1992), teaching (Prosser, Trigwell, and Taylor 1994), engine optimization (Sandberg 2000), chemical dependency counseling (Thombs and Osborn 2001), academic research (Brew 2001), mediation (Picard 2002), anesthesia (Larsson et al. 2004), hospital cleaning (Dutton, Debebe, and Wrzesniewski 2000), leadership (Lord and Hall 2005), project management (Chen and Partington 2006), and doctoral supervision (Wright, Murray, and Geale 2007). Second, more general work-related terms, such as "meaning of work" (England and Whitely 1990) and "work" (Chaves et al. 2004), are interpreted in a limited number of ways. Third, even terms unrelated to work that are supposedly objective, such as scores of science-related terms (Renstrom, Andersson, and Marton 1990), have a limited number of interpretations.

It is possible that cognitive models of customer service, and work in general, vary with competence. To the extent that work is an "action," action identification theory (Vallacher and Wegner 1987) can be applied to these cognitive models. This theory posits that an action can be construed at either low or high levels and that people move to higher levels as they gain experience in an action. Low-level construals contain the details of the action and how it is performed, and high-level construals contain a more general understanding of the action, such as why it is done. This change in construal level with competence is evident in Sandberg's (2000) study of engine optimizers. Less competent engineers viewed their work simply as the adjustment of engine parameters, such as exhaust emission levels, while competent engineers viewed their work as optimizing the customer's driving experience, indicating a focus on why the engine was being optimized. A change in construal level with experience is also observed in other domains (e.g., Chen and Partington 2006; Larsson et al. 2004; Picard 2002; Thombs and Osborn 2001; Wright, Murray, and Geale 2007). Service models also vary with FLE competence.

This study was conducted in two stages. The first stage identified different service models through interviews and a pilot survey of FLEs. The second stage examined the relationship between service models and FLE characteristics, such as competence and customer orientation. The remainder of this article details each stage's method and results and discusses the research and practical implications of the findings.

Study 1

Study 1 aims to identify how FLEs serving retail customers face to face conceptualize customer service. However, FLEs in business-to-business contexts were excluded because customer service may have a different meaning in this setting (Parasuraman 1998). Study 1 comprises two phases: The first phase includes exploratory interviews, and the second includes a larger-scale survey. The following subsections report the method of each phase and discuss the findings of both phases.

Phase 1

A phenomenographic interpretative approach was adopted. This approach is popular in educational research for mapping the different ways students understand various concepts (Marton 1981), though it has been used recently in organizational research to map engineers' understanding of their work (Sandberg 2000) and business leaders' and faculty members' understanding of business concepts (e.g., Atwater, Kannan, and Stephens 2008; Colbert and Kurucz 2007).

To obtain a variety of responses, in-depth interviews were conducted with 30 easily accessible FLEs working in a range of retail organizations in Sydney, Australia, in transactional and relational selling and nonselling roles. Job examples included clothing store sales associate, librarian, and bank loan officer. Some respondents had similar jobs (e.g., clothing store sales associates), which allowed for the exploration of service models within a particular job. A sample size of 30 was considered sufficient (Alexandersson 1994, as cited in Sandberg 2000). The interviews were conducted from February to June 2001 in places that were convenient for participants. Participants were asked two open-ended questions—what customer service meant to them and what a competent customer service representative was for them. The interviews ranged from 40 to 60 minutes and were taped and transcribed into 462 pages.

Analysis of the transcripts was conducted in several stages. The first stage involved listening to each interview tape at least twice and reading the transcript several times. Interesting or significant comments were highlighted, and revelations about the respondent's view of customer service were noted. The primary goal of this process was to become aware of participants' views and trains of thought. The second stage involved categorizing the ways respondents described customer service. Transcripts were summarized according to the participants' views of customer service, using representative quotations. The transcripts were then grouped according to commonalities in their summaries and quotations. Three groups emerged, representing three different interpretations of customer service. The third stage identified a common set of attributes that describe the operational aspects of the employee–customer interaction. The operational aspects expressed in each transcript were summarized using representative quotations. Quotations from transcripts in each of the three groups were pooled, and commonalities were sought. Quotations were also compared across the three groups, revealing four distinct attributes: conception of oneself, perception of the customer, the objective during a service encounter, and assessment of service quality. Transcripts, summaries, and representative quotations were stored in NUDIST (v4) software.

Various measures were taken to enhance the reliability and validity of the results. During the data generation phase, several steps were taken to minimize the possibility that participants' views would be influenced by the interviewer's views—for example, asking open-ended questions at the beginning of the interview to give the participants freedom to choose the aspects to incorporate in their answer and to avoid incorporating presumptions about the data, showing interest in the participants' opinions without being judgmental, avoiding leading questions that might reveal the interviewer's personal views, and asking follow-up questions to find out exactly what the participant meant and to elicit more comprehensive responses. During analysis, interview transcripts were checked against audiotapes. Analysis began after all interviews were completed. Predetermined theoretical structures were not used to group transcripts, all statements regardless of accuracy were treated as equally important, and interpretations of statements were checked for consistency with other statements made in the same interview. In addition, the service models were presented to an audience familiar with customer service management for feedback and were assessed quantitatively in a survey of a larger sample of FLEs in Phase 2.

Three qualitatively different service models emerged from the FLEs' descriptions: (1) the act of giving customers what they ask for, efficiently and courteously; (2) a means to accomplishing immediate objectives, such as sales quotas; and (3) the formation of mutually beneficial relationships with customers through problem solving. These three service models were termed "efficiency," "means," and "win-win," respectively. Each service model had a specific combination of four attributes that described the employee–customer encounter: the FLEs' perception of themselves, their perception of their customers, their objective during the encounter, and how they assessed the quality of service provided. Appendix A shows how these attributes varied in each service model and provides a representative quotation for each attribute. Each quotation has a label (e.g., Quotation 1 is labeled Q1) that is used as an identifier in the following summary of each service model.

In the win-win service model, customer service involves forming a mutually beneficial relationship with the customer based on problem solving:

> *Respondent (cell phone retailer, three years' customer service experience)*: Customer service is all about resolving customer needs. Having said that, there's always one or two ... customers you get that you think there's no way in the world you can help them. But at the end of the day, good customer service means you're taking one step further for that customer. So you might look into it a bit deeper, find out what's behind the ask, and hopefully find a solution, find a way for that customer to be happy. This way they start to know they can trust you to look after them, not take advantage of them, and you can start to get a friendship relationship going, which hopefully brings back more business down the track.

These FLEs focus on creating an atmosphere in which they can find out what the customer actually needs (which might be different from what they say they need), thus solving the customer's "real" problem (Q6, Q7). They use general principles, such as "treating customers as you'd like to be treated" rather than following detailed scripts or set procedures (Q8). The FLEs who espouse this service model perceive themselves as resources that customers can use to solve their problems (Q1). They do not consider themselves "slaves" to customers, nor do they view themselves as having a higher status than customers (Q9); rather, they seek customer respect to establish a beneficial relationship (Q2). They regard each customer as unique, with different needs generated by distinct circumstances, histories, and personalities (Q5). They view customers as understanding when an FLE makes a mistake because customers realize that they also make mistakes (Q4). (It is as if by accepting their own humanity [i.e., needing respect from the customer], they acknowledge the humanity of their customers.) They also perceive customers as being able to make their own decisions when given the right information (Q3). The quality of service is judged by the customer: Customer service is good when a customer decides that it is good (Q10, Q11).

In the efficiency service model, customer service means giving customers what they ask for, efficiently and courteously.

> *Respondent (café, two years' experience in customer service)*: [C]ustomer service is serving customers as quick as you can because customers don't want to wait in a long queue. We just want to serve them whatever they ask for quick. But not in a way that we're rough with them. We still have to be nice to them but still serve them quickly.
>
> *Interviewer*: What do you mean by "not being rough with them"?
>
> *Respondent*: Well, for example, when they're ordering coffee, we can't say "Hey, you. It's ready" when it's ready. We still have to be nice to them despite the fact that we're run off our feet, and it'd be easier to just yell out "ready" when it's done. What we have to do instead is, when they're ordering, get their names down and when their order's ready, we call out their name and say "your

> coffee or whatever is ready." It's much more civil this way because we're using their name. And we get to know them too.

These FLEs focus on ensuring that the procedures they follow and their words and actions are correct, regardless of how customers behave (Q19, Q20, Q21). In contrast to the win-win service model, in the efficiency service model, customers are allowed to behave rudely simply because they are the customer (Q16), though the FLEs tend to be disappointed with this behavior (Q18). These employees view customers as all wanting the same style of service (e.g., the same degree of politeness) from the FLE (Q17), thus the importance of following procedures closely. They view themselves as being of most use to customers when they can answer questions (Q12, Q13). They reported occasionally needing to hide their feelings, such as anger (Q14), but find this difficult when they are experiencing personal problems (Q15). The quality of service is determined by their own efforts: Customer service is good when the employee tries to make the customer happy and follows company procedures (Q22, Q23).

In the means service model, customer service is a means to an end, such as making a sale. All three service models recognize that customer service is important for long-term business success, but in this service model, customer service is also important in meeting more immediate, personal goals.

> *Respondent (gift store, 11 years' customer service experience)*: Customer service is satisfying enough of their needs to make a sale. That's all you want—a sale.
>
> *Interviewer*: Why "enough of their needs"?
>
> *Respondent*: Because it's impossible to satisfy all of their needs.

These FLEs focus on managing customers and making them feel as though they are friends (Q30–Q32). This is related to viewing customers as malleable, in the sense that their behavior can be influenced by the FLE's behavior (Q27, Q29). However, unlike the efficiency service model, in which all customers want the same style of service, this service model assumes distinct categories of customers that require different service approaches (Q28). These employees view themselves as actors (Q25), removed from customers (Q26), and capable of invoking different ways of relating to these customer groups in their dealings (Q24). The quality of service depends on whether the FLE's objectives have been achieved through influencing the customer (Q33–34). Some FLEs also use their organization's reputation for service as a reference point (Q35).

To summarize, Phase 1 uncovered three meanings of customer service in interviews with FLEs. Phase 2 assesses these findings in a survey of a larger sample of FLEs.

Phase 2: A Pilot Study

In this phase, FLEs at a variety of retail organizations completed a self-report pilot questionnaire. A cluster analysis of the responses was then conducted to identify groups with similar service models. This section describes the method and the results in more detail.

This study could not draw on established scales to measure service models. Thus, 35 items were developed for each service model's attributes (i.e., perceptions of self, customer, objective, and quality assessment), adapted from representative quotations. The items were five-point Likert scales ranging from "strongly disagree" to "strongly agree." An additional item asked respondents to select the statement that best described what customer service meant to them, and this item was used as an external validity check in the cluster analysis. The items were tested on nine respondents to check question wording and questionnaire layout and then were pretested on 57 FLEs. To obtain an adequate parameter-to-observation ratio, the items were divided into seven sets of related variables that were factor analyzed with oblique rotation: Four sets comprised (1) self, (2) customer, (3) objective, and (4) quality assessment items for all service models, and three sets comprised the (5) means, (6) efficiency, and (7) win-win items of each service model. Seven items were removed because of low variance or item-to-total correlations or high cross-loadings, leaving 28 usable items. Appendix A displays the scale items.

Additional questions asked respondents their gender, whether they had undergone formal training in customer service, the industry they worked in, their length of experience serving customers, whether they were involved in selling, and, if so, whether they had sales quotas to meet (see Appendix B). As discussed in the next section, Phase 1 suggested that service models vary with competence and customer orientation, so the survey also measured task and social competence (Van Dolen et al. 2002) and customer orientation (Brown et al. 2002).

The questionnaire was distributed to a convenience sample of FLEs in August 2004, and 346 usable surveys were returned in prepaid envelopes. Most (72%) respondents were women, 70% had no formal training in customer service, 76% were involved in selling, and, of these, 22% were required to meet sales quotas. The average experience serving customers was 4.2 years.

Confirmatory factor analysis (AMOS17, maximum likelihood estimation) was conducted on a measurement model that incorporated 28 observed service model items and 12 latent constructs representing the four attributes in each service model. The observed items were treated as reflective measures of their latent constructs (e.g., the self_E latent construct had three reflective measures). The measurement model fit indexes ($\chi^2 = 310$, d.f. = 284; goodness-of-fit index [GFI] = .93; comparative fit index [CFI] = .98; and root mean square error of approximation [RMSEA] = .03) indicated an acceptable fit with the hypothesized measurement model, given the exploratory nature of this study. Appendix A shows loadings for each item. Composite reliabilities ranged from .78 to .89, and average variance extracted ranged from .60 to .78. Discriminant validity was assessed by checking the difference between the average variance extracted and the squared correlations for all pairs of factors (Fornell and Larcker 1981); the smallest average variance of any construct was much higher than the largest squared correlation (.21), which suggests that the constructs displayed discriminant validity. Common method bias was not found to be a serious threat.[1] Mean scores were computed for each service model attribute for use in cluster analysis.

A cluster analysis was then conducted to identify groups of respondents with similar service models. Use of raw mean scores of the 12 attributes would have implicitly weighted attributes equally, which was a concern because theory was not used to guide the choice of attributes in Phase 1. Thus, an orthogonal factor analysis was conducted to identify underlying dimensions (Punj and Stewart 1983). Two factors emerged (see Table 1). An oblique rotation was also conducted, and the interfactor correlation was .066. The next section discusses factor interpretation. Because of the pattern of factor loadings, factor scores rather than attributes with the highest loadings were used to represent the factors to be cluster analyzed.

The 346 cases were then split randomly into two equal-sized data sets to form test and internal validation samples. The test sample was cluster analyzed, first using Ward's method to generate centroids for two, three, four, five, and six clusters and then using these centroids as seed values for k-means analysis. Cases in the internal validation sample were then assigned to the nearest centroids obtained in the test sample for two, three, four, five, and six clusters. The degree of agreement was calculated between this method of assigning cases in the internal validation sample and a fresh cluster analysis of the same sample. Three clusters were chosen for several reasons: This number yielded the maximum degree of agreement, the agglomeration schedule showed the largest increase going from four to three clusters for both data sets, and the scatterplot of the factor scores showed that the choice of three clusters was sensible.

The two data sets were then combined and cluster analyzed. Table 2 shows cluster centroids. As an external validity check, it was expected that respondents in Clusters 1, 2, and 3 would choose the statement corresponding to efficiency, means, and win-win service models, respectively, to describe what customer service meant to them. This was supported by a chi-square test ($p < .05$), with the respective percentages being 42%, 46%, and 57%. In summary, the results suggest that three distinct service models were present in the pilot sample.

Clusters were then profiled. Gender, training, and involvement in selling did not differ significantly between clusters. Of the cases involving selling, however, respondents in the means cluster were more likely than those in other clusters to be required to meet sales quotas ($p < .05$).

TABLE 1
Factor Structure of Attributes in Pilot Study

Attribute	Factor 1	Factor 2
Self_E	.61	
Self_M	.44	.35
Self_W	–.49	
Customer_E	.43	
Customer_M		.50
Customer_W	–.47	
Objective_E	.45	–.40
Objective_M		.55
Objective_W	–.57	
Quality_E	.67	–.32
Quality_M		.49
Quality_W	–.42	

Notes: N = 346. Factors were obtained from orthogonal factor rotation. Display of scores <.3 are suppressed. Suffixes _E, _M, and _W refer to efficiency, means, and win-win service models, respectively.

A multivariate analysis of variance (MANOVA) was used to test whether clusters differed in competence, customer orientation, and experience variables. These variables were intercorrelated and were used as dependent variables, with service model as the independent variable. Table 2 shows the results. A strong main effect emerged (Wilks' λ: $F = 35.2$, $p < .01$). Efficiency and win-win clusters scored the lowest and highest, respectively, in competence and length of experience. The means and win-win clusters had the lowest and highest customer orientation, respectively.

Discussion

The findings of this study suggest that three service models exist among retail FLEs: (1) the act of giving customers what they ask for, efficiently and courteously; (2) a means to accomplishing immediate objectives, such as sales quotas; and (3) the formation of mutually beneficial relationships with customers through problem solving.

The results of Phase 1 suggest that service models differ in the primacy of meeting customer needs. The efficiency and win-win service models focused on meeting customers' stated and real needs, respectively, and the means service model focused on achieving a personal objective. Satisfaction of customer needs characterizes customer orientation in sales and service settings (Brown et al. 2002; Saxe and Weitz 1982). The pilot study also showed that the means and win-win clusters scored the lowest and highest, respectively, in customer orientation. Thus:

> H_1: The means and win-win service models are associated with the (a) lowest and (b) highest levels of customer orientation, respectively.

Service models may also vary with FLE competence. There are four reasons for this conjecture. First, efficiency respondents focused on the actions involved in customer service and followed a procedure or routine for interacting with customers, whereas win-win respondents aimed to create an atmosphere conducive to problem solving rather than simply following prescribed problem-solving procedures. This difference seems similar to the low- and high-level construals in action identification theory (Vallacher and

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[1] Common method bias was assessed but was not considered a serious threat. Harmon's one-factor test (McFarlin and Sweeney 1992) showed that a one-factor model was a worse fit ($\Delta\chi^2 = 3016$, d.f. = 66, $p < .001$), and the first factor derived from an oblique factor analysis of the 28 items explained 19% of the total variance while 12 factors explained 67%. In addition, 16 of the 66 correlations between attribute constructs were not significant, and 5 of these 16 were negative, suggesting that high values for the other correlations were not artifactual (Lindell and Brandt 2000).

TABLE 2
Cluster Characteristics in Studies 1 and 2

	Cluster				
	Efficiency	**Means**	**Win-Win**		
Study 1: Pilot Sample					
Cluster size	168	102	76		
Factor 1 centroid	.65	–.10	–1.34		
Factor 2 centroid	–.42	1.04	–.43		
Number of respondents with sales quotas	21	25	13		
MANOVA Univariate Tests				**Scheffe Comparison**	
Mean enjoy	4.78	4.30	5.75	Efficiency < win-win*	
Mean need	5.05	4.57	5.81	Means < efficiency*	Efficiency < win-win*
Mean task competence	4.39	4.93	5.74	Efficiency < means*	Means < win-win*
Mean social competence	3.46	3.68	5.04	Means < win-win*	
Mean years' experience[a]	1.73	3.42	7.85	Efficiency < means*	Means < win-win*
Study 1: Salesperson Sample[b]					
Cluster size	76	89	62		
Factor 1 centroid	–1.08	.07	1.22		
Factor 2 centroid	–.72	1.06	–.63		
MANOVA Univariate Tests				**Planned Contrast**	
Mean enjoy	3.51	2.89	3.86	H_{1a}: Means < efficiency*	H_{1b}: Efficiency < win-win*
Mean need	3.48	3.28	3.83	H_{1a}: Means < efficiency*	H_{1b}: Efficiency < win-win*
Mean task competence	2.47	2.94	3.04	H_{2a}: Efficiency < means*	H_{2b}: Means < win-win$^{n.s.}$
Mean social competence	2.43	2.83	3.28	H_{2a}: Efficiency < means*	H_{2b}: Means < win-win*
Mean years' experience[a]	4.90	6.80	10.10	H_{2a}: Efficiency < means*	H_{2b}: Means < win-win*
Mean relative performance	2.17	2.38	2.50	H_{2a}: Efficiency < means*	H_{2b}: Means < win-win$^{n.s.}$
Autos sold	.78	1.02	1.08	H_{2a}: Efficiency < means*	H_{2b}: Means < win-win$^{n.s.}$
Mean detachment	3.14	3.21	2.06	H_{3a}: Efficiency > means$^{n.s.}$	H_{3b}: Means > win-win*
Mean submissiveness	3.75	3.17	3.47	H_{4a}: Efficiency > win-win*	H_{4b}: Win-win > means*
Mean surface acting	3.32	3.70	2.95	H_{5a}: Win-win < efficiency*	H_{5a}: Win-win < means*
Mean deep acting	2.75	2.94	3.54	H_{5b}: Win-win > efficiency*	H_{5b}: Win-win > means*
Study 2: Concierge Sample[b]					
Cluster size	111	89	79		
Factor 1 centroid	–.83	.07	1.09		
Factor 2 centroid	–.59	1.15	–.47		
MANOVA Univariate Tests				**Planned Contrast**	
Mean enjoy	3.28	2.79	3.66	H_{1a}: Means < efficiency*	H_{1b}: Efficiency < win-win*
Mean need	3.45	3.37	3.75	H_{1a}: Means < efficiency$^{n.s.}$	H_{1b}: Efficiency < win-win*
Mean task competence	2.10	2.35	3.14	H_{2a}: Efficiency < means*	H_{2b}: Means < win-win*
Mean social competence	2.80	2.74	3.36	H_{2a}: Efficiency < means$^{n.s.}$	H_{2b}: Means < win-win*
Mean years' experience[a]	3.53	5.73	8.44	H_{2a}: Efficiency < means*	H_{2b}: Means < win-win*
Mean relative performance	2.22	2.34	2.41	Univariate test not significant	
Mean detachment	3.29	2.74	2.23	H_{3a}: Efficiency > means*	H_{3b}: Means > win-win*
Mean submissiveness	3.94	3.06	3.85	H_{4a}: Efficiency > win-win$^{n.s.}$	H_{4b}: Win-win > means*
Mean surface acting	3.59	3.62	3.17	H_{5a}: Win-win < efficiency*	H_{5a}: Win-win < means*
Mean deep acting	2.91	2.60	3.70	H_{5b}: Win-win > efficiency*	H_{5b}: Win-win > means*

*$p < .05$.
[a]Homogeneity of variance violated for this variable.
[b]Gender and training did not differ among clusters in this sample.
Notes: n.s. = not significant.

Wegner 1987), which posits that as people gain experience in an activity, they move to higher-level construals. Second, efficiency respondents focus more on customers' literal statements of need (i.e., their stated wants), whereas win-win respondents focus on understanding the deeper underlying reasons for customers' stated needs. This difference is similar to novice and expert problem solvers: Novices tend to view problems on a surface level and follow a rule- or recipe-based approach to problem solving, whereas experts consider problems on a deeper level and see larger, more meaningful patterns in the problem (Chi, Glaser, and Farr 1988). Third, each service model views customers at different levels of "individuality": Efficiency respondents view customers as all wanting the same style of service, means respondents categorize customers into distinct types, and win-win interview respondents recognized the uniqueness of each customer. These differences correspond to findings in studies of service customization (Bettencourt and Gwinner 1996) and adaptive selling[2] (Spiro and Weitz 1990) that show that as FLEs gain experience, they are better able to recognize and adapt to customer differences and thus perform better. Fourth, the pilot study showed that efficiency, means, and win-win clusters had generally increasing task and social competence, as well as customer service experience. Other researchers have noted a relationship between length of experience and competence, expertise, and performance (Benner, Tanner, and Chesla 1996; Ericcson, Krampe, and Tesch-Romer 1993; McDaniel, Schmidt, and Hunter 1988). Thus:

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[2]Thanks to an anonymous reviewer who suggested this idea.

> H_2: The efficiency and win-win service models are associated with the (a) lowest and (b) highest competence, respectively.

A surprising finding was the two-factor structure underlying the 12 attribute constructs that emerged during preparation of the data for cluster analysis. It would have been less surprising if one factor had emerged for each service model on which the attributes for that model loaded. However, the model comprising three higher-order factors had a poorer fit (Akaike information criterion [AIC] = 620, Bayesian information criterion [BIC] = 885) than the one with two higher-order factors (AIC = 555, BIC = 824). Because a quarter of the sample was not involved in selling, the two factors could not be interpreted as customer and sales orientation, which some studies (e.g., Michaels and Day 1985) have found to be two dimensions. Thus, this compelled the exploration of a more general theory to explain the two-factor finding. A possibility is Leary's (1957) interpersonal theory, in which affiliation (i.e., the regard a person has for another) and control (the degree to which an actor attempts to control another's behavior) represent two orthogonal dimensions underlying all interpersonal behavior. The affiliation dimension is anchored at one end by detachment or cold-heartedness and at the other end by agreeableness and warmth. The control dimension is anchored at one end by assuredness and dominance (e.g., trying to control the interaction) and at the other end by unassuredness and submissiveness (Wiggins, Trapnell, and Phillips 1988).

The two-factor structure is consistent with the interpersonal theory interpretation. The interfactor correlation was .066, making the factors almost orthogonal. The first factor seems to correspond to the level of affiliation with the customer, with positive and negative poles representing detachment and closeness, respectively, as the efficiency and win-win attributes loaded positively and negatively, respectively, onto this factor. The second factor seems to correspond to the level of FLE submissiveness, with positive and negative poles representing control over the customer and control by the customer, respectively, as the means attributes loaded positively onto this factor, and some efficiency attributes loaded negatively. Thus:

> H_3: The efficiency and win-win service models are associated with the (a) highest and (b) lowest levels of FLE detachment from the customer, respectively.
>
> H_4: The efficiency and means service models are associated with the (a) highest and (b) lowest levels of submissiveness to the customer, respectively.

The results of Study 1 also suggest that service models are related to the type of acting an FLE performs. Service literature analogizes service providers to actors in a drama (e.g., Grove, Fisk, and Bitner 1992), and efficiency and means FLEs in this study regarded themselves that way. However, it seems incongruous that those who did not liken service to acting (win-win) were more competent than those who did. This incongruity might be resolved by distinguishing between "surface acting," in which FLEs change only their outward behavior to exhibit required emotions, and "deep acting," in which they express required emotions by creating these emotions within themselves (Hochschild 1983).[3] The literature suggests a relationship between competence and type of acting: Deep acting is positively related to service performance (Totterdell and Holman 2003) and personal accomplishment (Brotheridge and Lee 2003), and age, which might be related to job experience and competence, is positively related to deep acting in teachers (Näring, Briët, and Brouwers 2006) and authenticity in salespeople (Schaefer and Pettijohn 2006). Given that the service models are expected to correspond to differing levels of competence, this leads to the following hypothesis:

> H_5: Compared with efficiency and means, the win-win service model is associated with (a) the lowest level of surface acting and (b) the highest level of deep acting.

Figure 1 illustrates the hypothesized relationships. The next section details a study that tests these hypotheses on a more representative sample of FLEs.

Study 2

The method employed in Study 2 mirrors that of the pilot study. A self-report questionnaire was administered, the resultant service model responses were cluster analyzed, and differences in clusters were tested with a MANOVA.

Samples

Samples were drawn from two contexts. One sample comprised hotel concierges, who usually engage in brief transactions with customers who want fast and efficient service. The other sample comprised new automobile salespeople, who usually have sales quotas and interact with customers in extended encounters, facilitating exploration of customer needs to solve problems. The hotel and automobile contexts enabled observation of how service models varied across what are traditionally viewed as "service-based" and "goods-based" industries, respectively (Vargo and Lusch 2004).

For the salesperson sample, 800 new automobile dealerships in two major cities were selected from the telephone directory. For the concierge sample, 800 four- and five-star hotels in five major cities were selected from an online hotel directory. Automobile sales managers and hotel head concierges were mailed a letter requesting that two enclosed surveys, each with a prepaid return envelope, be distributed to two of their salespeople or concierges, respectively.[4] The

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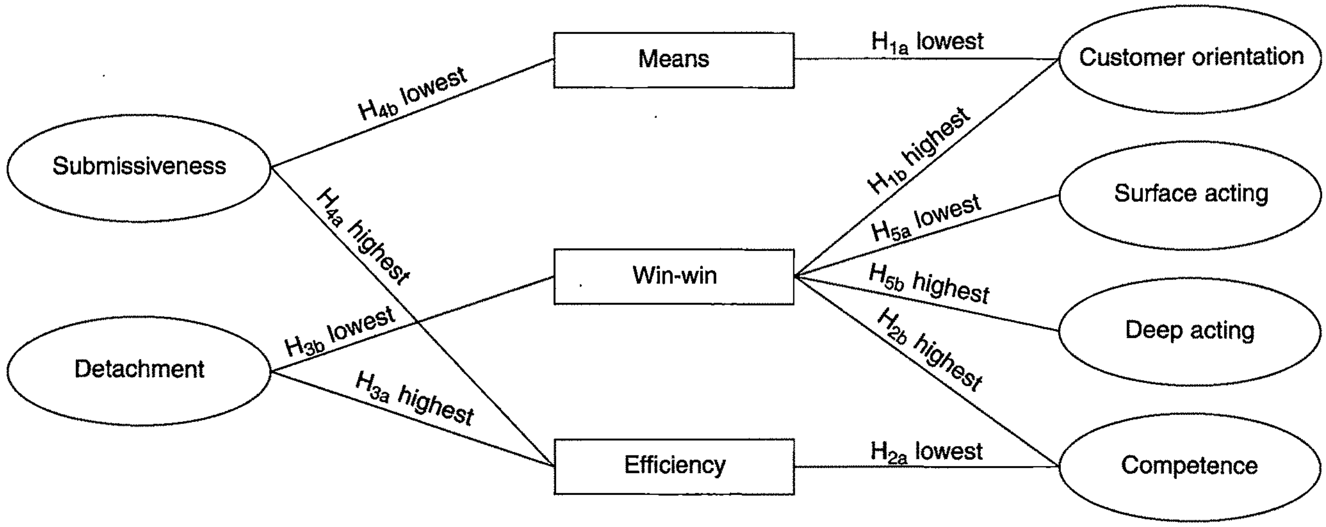
[3] Thanks to an anonymous reviewer who suggested this idea.

[4] Respondents and managers could receive a summary of the results on request.

FIGURE 1
Conceptual Framework for Hypothesis Development: Service Model



request to limit the surveys to two employees at each organization served to reduce multilevel effects. Of the salesperson and concierge samples, respectively, 227 and 281 usable surveys were returned, 89% and 65% were men, 67% and 83% had formal training in customer service, and the average amount of service experience was 7.1 and 5.6 years.[5] Most (93%) salespeople were required to meet sales quotas.

Measures

Service models were assessed with the 28 items used in the pilot study.[6] Measurement model fit (AMOS17, maximum likelihood estimation) was adequate for both samples (salespeople: $\chi^2 = 355$, d.f. = 284; GFI = .90; CFI = .96; and RMSEA = .033; concierges: $\chi^2 = 462$, d.f. = 284; GFI = .89; CFI = .91; and RMSEA = .047). Appendix A shows item loadings for each sample.

Submissiveness and detachment were measured using Locke's (2000) interpersonal values scale. Customer orientation and surface and deep acting were measured with Brown and colleagues' (2002) and Brotheridge and Lee's (2003) scales, respectively. Competence was assessed by several measures: (1) the competence scale used in the pilot; (2) length of service experience; (3) a self-report measure of customer service performance compared with peers; and (4) for salespeople, the average number of automobiles they sold each month and the number of automobiles a typical salesperson in the dealership would sell per month. The ratio of each salesperson's two estimates was used in the analysis to account for differences among dealerships, such as socioeconomic region and automobile price. The competence measures were not combined into a single measure, enabling the observation of how they varied individually by service model. Appendix B shows the scale items. Table 3 shows the correlations and summary statistics for both samples.

Analysis

An orthogonal factor analysis on mean attribute scores produced two factors that were used as inputs to subsequent cluster analysis. The model with two higher-order factors had a better fit (salespeople: AIC = 592, BIC = 838; concierges: AIC = 687, BIC = 938) than the one with three higher-order factors (salespeople: AIC = 626, BIC = 865; concierges: AIC = 702, BIC = 956). Cluster analysis of the service model items produced three clusters for both samples, each corresponding to a service model. Table 2 shows the cluster centroids. A MANOVA was conducted with cluster as the independent variable and customer orientation, interpersonal values, acting, and competence measures as dependent intercorrelated variables. A strong main effect emerged for both samples (Wilks' λ: salespeople: F = 16.3, $p = .000$; concierges: F = 18.2 $p = .000$). Univariate tests showed that clusters differed on each dependent variable in both samples ($p < .01$) except for relative performance ($p = .22$) among concierges.

Planned contrasts were used to test the hypotheses. Table 2 shows the results. H_1 predicted that the means and win-win service models would have the (a) lowest and (b) highest customer orientation, respectively. H_{1a} was fully supported in the salesperson sample but only partially supported in the concierge sample because means differed from efficiency only on the enjoy dimension. H_{1b} was supported in both samples. H_2, which predicted that efficiency and win-win service models would be associated with the (a) lowest and (b) highest competence, respectively, was sup-

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[5] The effective response rate was 16.3% and 18.8% for the salesperson and concierge sample, respectively. Responses from early and late respondents on service model items and background variables were similar, suggesting that nonresponse bias was not significant.

[6] Item wording was changed to suit the sample. For example, "concierge" replaced "service representative" in the questionnaire administered to concierges.

TABLE 3
Correlations and Summary Statistics of Study 2 Measures

	Correlations																								
Variables	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
1. Self_E		.08	–.25	.31	–0.2	–.16	.32	–.08	–.40	.28	–.17	–.24	–.59	–.20	.02	–.01	.25	.05	.22	–.05	–.12	–.31	–.23	–.07	–.29
2. Self_M	.04		–.12	.01	0.2	–.25	.03	.16	–.17	.08	.21	–.28	–.31	.60	–.37	–.24	.35	–.15	.36	–.03	.01	–.13	–.14	–.17	.05
3. Self_W	–.15	.02		–.26	0.1	.24	–.27	.09	.44	–.28	.03	.34	.63	–.03	.13	.11	–.35	–.06	–.13	.09	.12	.17	.21	.14	.19
4. Customer_E	.19	–.05	–.13		–.35	–.17	.36	–.17	–.40	.45	–.22	–.27	–.65	–.38	.12	–.01	.18	.27	–.05	–.15	–.12	–.22	–.23	–.17	–.34
5. Customer_M	–.05	.34	.14	–.10		–.01	–.30	.24	.15	–.25	.29	–.01	.30	.67	–.26	–.11	.03	–.28	.16	.05	.10	.13	.08	.13	.19
6. Customer_W	–.09	–.12	.17	–.08	.06		–.17	.03	.22	–.21	–.01	.34	.50	–.26	.21	.14	–.44	–.01	–.10	.19	.14	.25	.18	.07	.21
7. Objective_E	.16	.01	–.26	.24	–.09	–.15		–.08	–.34	.36	–.13	–.19	–.60	–.27	–.01	.02	.14	.32	.18	–.03	–.20	–.15	–.14	–.02	–.20
8. Objective_M	–.01	.36	–.02	–.06	.15	–.01	–.05		.18	–.05	.21	–.11	.12	.52	–.17	–.11	.11	–.03	.22	.11	–.08	–.08	–.07	–.10	.07
9. Objective_W	–.32	–.07	.38	–.36	.06	.38	–.35	–.08		–.22	.10	.28	.63	.10	.13	.19	–.27	–.08	–.07	.25	.10	.25	.21	.21	.34
10. Quality_E	.15	–.08	–.17	.23	–.03	–.03	.22	–.14	–.09		–.18	–.17	–.59	–.26	.15	.03	.23	.18	.01	–.16	–.11	–.23	–.25	–.15	–.36
11. Quality_M	–.18	.20	.09	–.16	.11	.05	–.12	.16	.18	–.07		–.10	.14	.64	–.24	–.08	.08	–.15	.19	–.01	.14	.05	–.05	.07	.12
12. Quality_W	–.24	.02	.29	–.08	.06	.20	–.17	.03	.36	–.11	.13		.53	–.35	.22	.16	–.28	–.01	–.21	.15	.15	.18	.29	.18	.19
13. Factor 1[a]	–.51	–.08	.59	–.48	.14	.44	–.57	–.03	.70	–.33	.30	.56		.10	.13	.14	–.45	–.19	–.20	.22	.22	.36	.37	.23	.42
14. Factor 2[a]	–.06	.71	.07	–.23	.56	–.16	–.13	.68	–.06	–.29	.43	.05	.08		–.45	–.24	.25	–.29	.33	.01	.06	–.01	–.07	–.03	.20
15. Enjoy	–.06	–.22	.09	–.01	–.20	.12	–.10	–.25	.14	–.04	–.15	.13	.16	–.33		.52	–.30	.15	–.21	.05	.08	.08	.14	.15	–.03
16. Need	.04	–.05	.07	.01	–.15	.13	–.18	–.07	.03	–.08	–.02	.09	.11	–.08	.42		–.21	.09	–.07	.15	.19	.19	.16	.19	.07
17. Detachment	.33	.06	–.25	.32	–.03	–.31	.31	.08	–.42	.17	–.19	–.27	–.60	.01	–.08	–.08		–.13	.18	–.18	–.14	–.45	–.26	–.25	–.17
18. Submissiveness	.06	–.40	–.01	.10	–.31	–.03	.05	–.45	.01	.11	–.25	–.04	–.05	–.54	.28	.12	.05		.02	.08	–.10	.05	–.08	–.03	–.20
19. Surface acting	.22	.16	–.09	.13	.05	–.05	.01	.07	–.18	–.04	.06	–.05	–.17	.14	–.13	.16	.14	.06		.56	–.01	–.11	–.10	.03	–.03
20. Deep acting	–.04	–.22	.06	–.05	–.07	.20	–.11	–.22	.15	.02	.01	.12	.19	–.24	.14	.19	.01	.15	.14		.04	.11	.16	.12	.11
21. Task competence	–.17	–.10	.27	–.18	.04	.22	–.20	–.10	.27	–.17	.21	.28	.41	–.02	.12	.16	–.19	.04	–.09	.25		.24	.41	.26	.32
22. Social competence	–.07	–.08	.17	–.08	.01	.12	–.17	–.13	.22	–.05	.01	.23	.26	–.09	.16	.12	–.09	.05	–.16	.17	.44		.45	.36	.27
23. Experience	–.21	–.06	.31	–.22	.06	.21	–.32	–.07	.25	–.22	.15	.36	.39	.03	.18	.19	–.23	–.02	–.19	.13	.54	.50		.42	.52
24. Relative performance	–.08	.03	.06	–.05	–.01	.08	–.13	.01	.02	–.20	.03	.01	.11	.06	.16	.17	–.09	–.13	–.02	.03	.34	.22	.39		.18
25. Autos sold	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Salesperson Sample Summary Statistics																									
M	3.19	3.27	3.06	2.77	3.13	3.01	3.04	3.26	3.08	3.06	3.11	2.83	0	0	3.36	3.40	2.87	3.45	3.37	3.04	2.81	2.82	7.09	2.36	1.10
SD	1.05	1.00	1.04	1.15	1.15	1.06	.99	1.12	1.02	1.03	1.05	1.17	1.00	1.00	1.02	.93	1.03	1.10	.94	.96	.94	1.09	4.75	.69	.39
Concierge Sample Summary Statistics																									
M	3.43	3.01	2.84	3.28	2.93	3.13	3.32	2.73	3.04	3.26	2.82	2.71	0	0	3.24	3.51	2.81	3.63	3.49	3.23	2.58	2.94	5.62	2.27	—
SD	1.11	.99	1.07	1.14	1.03	1.06	1.02	1.00	1.04	1.08	.98	1.14	1.00	1.00	1.05	.94	1.09	1.10	1.03	1.07	.93	.98	5.16	.73	—

[a] Factors obtained from an oblique rotation of attributes.

Notes: Correlations for salesperson and concierge samples appear on upper and lower diagonal, respectively. Suffixes _E, _M, and _W refer to efficiency, means, and win-win models, respectively. For the salesperson sample, N = 227, $p < .05$ for r > .13; for the concierge sample, N = 281, $p < .05$ for r > .12.

ported by most competence measures but not all: Means and win-win salespeople did not differ in task competence and autos sold, and means and efficiency concierges did not differ on social competence.[7] Relative service performance differed only between efficiency and means salespeople, which might be due to FLEs assessing their service performance using different reference points. For example, win-win FLEs might have relied on customer feedback to estimate service performance, whereas efficiency FLEs might have relied on how closely they follow procedures compared with their peers. In addition, FLEs with access to objective performance data, such as salespeople, might use this data to moderate their service assessments.

H_3 predicted that the efficiency and win-win service models would have the (a) highest and (b) lowest detachment, respectively. H_{3a} was supported in the concierge sample only; means and efficiency salespeople had similar detachment levels. H_{3b} was supported in both samples. H_4 predicted that efficiency and means service models would have the (a) highest and (b) lowest submissiveness, respectively. H_{4a} was supported in the salesperson sample only; efficiency and win-win concierges had similar submissiveness levels. H_{4b} was supported in both samples. H_5 predicted that the win-win service model would have (a) the lowest levels of surface acting and (b) the highest levels of deep acting, respectively. This was supported in both samples.

Although specific hypotheses regarding industry effects were not developed, the results suggest that industry influences service models somewhat because the modal service model in each sample differed.[8] The efficiency service model dominated in the concierge sample, probably because many hotel guests only require a quick response. The means service model dominated in the salesperson sample, probably because salespeople's livelihoods generally depend on achieving sales targets.

The samples also varied in their interpretations of service model items, judging by the different loading patterns of the attributes onto the two cluster factors (see Table 3). For example, the correlation of quality_W with Factor 2 was .05 and –.35 in the concierge and salesperson samples, respectively. The relationship between the two cluster factors and the interpersonal dimensions also differed between samples, suggesting that Factors 1 and 2 are rotated slightly counterclockwise from the detachment–submissiveness axes, with the degree of rotation depending on the sample. This might explain why hypotheses regarding interpersonal dimensions (H_3 and H_4) were only partially supported; they were developed assuming that the two factors found in cluster analysis were perfectly aligned with the detachment–submissiveness dimensions of interpersonal theory. The difference in item interpretation between the samples could be due to differences in "occupational ideology" (Kunda 1986) or shared belief system; for example, concierges and salespeople could differ in what they view as "submissive behavior."

General Discussion

This study found three service models among FLEs: (1) the act of giving customers what they ask for, efficiently and courteously; (2) a means to accomplishing immediate objectives, such as sales quotas; and (3) the formation of mutually beneficial relationships with customers through problem solving. These service models were related to customer orientation, competence, type of acting, and interpersonal values.

Theoretical Implications

A prevailing but implicit assumption in the service literature is that FLEs have a common interpretation of customer service. It is shown that FLEs actually have three distinct interpretations, a result that is in concordance with action identification theory. Efficiency FLEs construe customer service at a low level, focusing on how to provide customer service by ensuring that their words and actions are correct. Win-win FLEs construe customer service at a high level, focusing on why they provide customer service (e.g., to solve customer problems). Finally, more experienced FLEs have higher-level construals than less experienced ones.

Perhaps because of the assumption of a common interpretation of customer service among FLEs, service literature has ascribed differences in attitudes, behaviors, and performance among FLEs to organizational characteristics (e.g., Babakus et al. 2003), immediate social environment (e.g., Sergeant and Frenkel 2000), global perceptions of the job (e.g., Singh 2000), and personality (e.g., Hurley 1998). This article suggests that FLEs' service models also matter. Thus, differences in measured attitudes, behaviors, and performance among FLEs might be due to respondents' having different service models. For example, moving from low to high customer orientation involves a change in how a customer is viewed—namely, from someone who can be controlled in the means view, to someone who requires politeness in the efficiency view, to someone who is a respected collaborator in the win-win view.

The findings may also illuminate individual-level beliefs underlying various typologies of service mind-sets and behaviors. One typology focuses on the firm's mind-set, or "logic," through which the firm–customer exchange is viewed (Vargo and Lusch 2004). A goods-dominant logic focuses on producing a product that is standardized for efficiency and whose value is objectively determined; customers are viewed as entities to be acted on (e.g., by the marketing mix) to effect an outcome, such as product purchase. A service-dominant logic focuses on using a firm's resources to benefit customers by developing a dialogue with them based on trust, so that together, the firm and customers can solve the customers' problems (i.e., value is determined by the customer).

To the extent that a firm's dominant logic arises from logic shared among individuals, the results illuminate how the goods- and service-dominant logics might operate at the individual FLE level.[9] The efficiency service model seems consonant with a goods-dominant logic because it focuses on ensuring that the same, efficient service is produced for all customers. The means service model also seems consonant with a goods-dominant logic because it influences customers to achieve a particular outcome. In both service models, service is judged by what an FLE does rather than by the customer him- or herself. In contrast, the win-win service model is consonant with a service-dominant logic because it focuses on establishing a collaborative and respectful relationship to solve the customer's problem in a customized way, using the FLE's knowledge as a resource, and it is the customer rather than the FLE who determines service quality. This result raises questions about the outcomes of match and mismatch between individual and firm logics and whether people choose firms whose logics match their own.[10]

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[7] As one reviewer mentioned, if sales performance had been measured as profit contribution margin, perhaps a performance difference between FLEs with different service models would have been observed because win-win salespeople might be able to sell automobiles with more accessories or at a less discounted price and their customers might return to the dealership for servicing of the automobile.

[8] Thanks to an anonymous reviewer who suggested this idea.

Other typologies focus on FLE attitudes and behaviors. Ford and Etienne's (1994) typology consists of "manipulative service," which intends to deceive or control customers to achieve immediate results; "courteous service," such as smiling and friendly greeting to produce an immediate positive response; and "personalized service," which recognizes customers' uniqueness and presents them with options to ensure that their needs are met. Peccei and Rosenthal's (2000) typology consists of "behavioral compliant" employees, who engage in customer-oriented behavior but are not committed to customer service; "lip service" employees, who exhibit low levels of customer-oriented behavior but considerable commitment to customer service; and "committed" employees, who have high levels of customer-oriented behavior and commitment to customer service. The groups in these two typologies seem to correspond to the means, efficiency, and win-win service models, respectively.

Ford and Etienne (1994) and Peccei and Rosenthal (2000) attribute type membership to organizational characteristics (e.g., service climate), immediate social environment (e.g., cooperative relationships with customers), job characteristics (e.g., job autonomy), or individual characteristics (e.g., organizational commitment and competence). The results of the current study are in concordance with theirs in some respects (e.g., competence and relationships with customers), but this study goes further in arguing that type membership may also be determined by FLEs' service models. To the extent that behavior is a result of cognition, this study also suggests that the reason typologies arise in the first place is that people have distinct cognitive interpretations of customer service.

Managerial Implications

A practical implication of this study is related to the recruitment of FLEs. The suitability of people for service roles is commonly gauged by assessing their particular skills, behaviors, or personality traits (e.g., Hogan, Hogan, and Busch 1984; Schneider and Schechter 1991). These methods implicitly assume that job candidates have a common interpretation of what customer service is. This study suggests that assessment of job candidates' service models can complement these other methods. Thus, if a firm aims to develop collaborative, problem-solving relationships with customers to deliver customized offerings, job candidates subscribing to a win-win service model would be most suitable. The service models of job candidates can be discerned by probing how they view themselves and customers, their objective during a service encounter, and how they judge their service quality.

Another implication is related to customer service training. Consider the value of training that encourages FLEs to think of their jobs as acting or that measures how often FLEs exhibit certain behaviors, such as saying customer names (e.g., Marek and Miller 2007; Slowiak, Madden, and Mathews 2005). This study shows that FLEs who liken service to acting are less competent than those who do not, and it is easy to imagine efficiency-oriented FLEs happily following instructions to say customers' names but not necessarily establishing the "relationship side" of customer service. Thus, training methods focusing on conceptual change—or a modification in paradigmatic ways of thinking—may also be necessary (Posner et al. 1982). In general, these methods comprise an awareness phase that articulates service models, a disequilibrium phase that introduces anomalies in low-order models, and a reformation phase that presents a model that resolves the anomalies (West 1988). For example, specific aspects of service models that could be probed in the articulation phase are FLEs' perceptions of themselves and the customer, their objective during an encounter, and how they assess service quality.

Limitations and Further Research

A limitation of this study is that there may be more than just the three service models discussed herein. There might be at least one more.[11] Peccei and Rosenthal (2000) found a fourth group of employees ("rejectors") who are neither committed to customer service nor display customer-oriented behavior. Their research seems to have been management sponsored, and rejectors may have used the survey to communicate their indifference to management. The current study is not management sponsored, and rejectors may have perceived participation as a waste of time if they cared little about customer service in the first place.

This study associated service models with FLE-related outcomes, such as customer orientation. Further research could examine customer outcomes; however, just comparing, for example, customer satisfaction ratings for FLEs with different service models may be inadequate, because consumers seem to have their own service models (Ringberg, Odekerken-Schröder, and Christensen 2007) that might be related to interpersonal values. Thus, research should consider the interaction between employees' and customers' service models. Interpersonal theory posits that when two people interact socially, the behavior of one tends to invite complementary behavior from the other (e.g., dominant behavior invites submissive behavior). This complementarity explains outcomes of patient–physician interactions, such as patient satisfaction (Kiesler and Auerbach 2003), and may also explain why certain combinations of salesperson and customer communication styles result in more sales than others (Williams and Spiro 1985). Therefore, it is plausible that certain combinations of employee and customer service models, or interpersonal values, produce better customer outcomes than others.

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[9] Thanks to an anonymous reviewer who suggested this idea.

[10] Thanks to an anonymous reviewer who suggested this idea.

[11] This idea was suggested in feedback obtained during presentation of the qualitative results to an audience familiar with customer service management and by an anonymous reviewer.

This study explores how service models vary with one contextual variable: industry. Other contextual effects might also be explored because they might affect the development of service models. Some contexts might even induce regression among service models; action identification theory posits that people might be able to construe an action at a higher level but move to lower-level construals when there is "high-level disruption" (Vallacher and Wegner 1987, p. 5) in an environment. A contextual factor might be the training an FLE receives. Training was not significant in this study, but only a dichotomous (yes/no) measure of formal training was used. There are many types of training available, differing in length, aims, and methods; some (e.g., Sturdy 2000) even seem to expound a means view of service. Another contextual factor might be the employee–customer communication medium[12] because communicating by telephone or e-mail, for example, might affect the degree to which interactions are perceived as interpersonal.

The cultures within which an FLE works and lives might also affect service models. An FLE's relationships with and views and expectations of managers, coworkers, and customers might affect how he or she views customer service[13]; people working together tend to interpret organizational events and characteristics similarly (Rentsch 1990), and the quality of manager–worker relationships influences employee job conceptions (Hsiung and Tsai 2009). The broader societal culture may also influence the content of service models. For example, the importance of smiling and politeness varies across countries, as suggested by Rafaeli's (1989, p. 263) observation of general rudeness of FLEs in Israeli supermarkets and the following conversation:

> *Customer*: In America, all the cashiers smile.
> *Cashier*: So go to America. What do you want from me?

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[12] Thanks to an anonymous reviewer who suggested this idea.
[13] Thanks to an anonymous reviewer who suggested this idea.

APPENDIX A
Representative Quotations, Scale Items, and Loadings

A: Win-Win Service Model

Attribute (Attribute Label) and Representative Quotations	Scale Item	Item Loading[a]
Perception of Self (self_W)		
Q1: Your customer, as much as you can, should be able to receive 100% of your attention and be able to use you for all your resources as a customer service professional to help them out. (*cell phone store, 3, 3*)[b]	I am a resource for customers to use in their problem solving.	.90/.61/.77
Q2: You need customers to respect you too. It's not that they can walk all over you, or give you the finger. Because like in any situation, in relationships, if there's no respect between two people, it's not going to work. (*shoe store, 4, 2*)	I need respect from customers to provide good service.	.77/.88/.69
Perception of Customer (customer_W)		
Q3: They [customers] need time to think about the product, the information, and to decide what's best. (*electrical goods, 15, 5*)	Customers are perfectly able to make their own decisions.	.88/.69/.71
Q4: So, if you do forget to follow through, because people, I mean, you're only human—you may forget. Apologize, be nice about it, because they'll understand you're only human. Most people will understand because they all work and they know that things like that happen. (*travel agency, 18, 8*)	Customers are understanding when I've made a mistake, as they are human too.	.77/.80/.75
Q5: As I was saying with everyone being treated the same, it's not about us doing the same thing with each customer, like smiling the same, the same hello, the same everything, like a robot.... But it's finding out how each customer, each customer's personality, how they like to be treated, and going along with that. (*clothing store, 9,4*)	Every customer is unique. (D)	
Objective During an Encounter (objective_W)		
Q6: You see the important thing is you have to establish trust first; then you go on to try to understand what they need, show them that you care. You can't just go on talking about the product. If you keep on talking about the product, you'll miss the reason why they need it in the first place. (*cell phone store, 3, 3*)	While serving a customer, I focus on establishing an atmosphere to help solve the customer's problem.	.76/.69/.84

APPENDIX A
Continued

Attribute (Attribute Label) and Representative Quotations	Scale Item	Item Loading^a
Q7 Their needs and wants are two different things You need to know why they're asking for the product they want Is it because of the brand? Is it because of a particular function? After you know the actual, the whole, reason behind why they want a product, then you can provide them with the proper information, so that they make a better decision with better understanding (*electrical goods, 15, 5*)	It is more important to satisfy customers' actual needs rather than what they say they need	83/ 79/ 68
Q8 To me, there's no real training or techniques for customer service The training that I say to staff is, "always put yourself in the shoes of a customer" In one way or another we're also receiving customer service from someone else, so we're also a customer So always put yourself in their situation and see how you would like to be treated and that's how you should be treating the customer (*library, 26, 22*)	It is more important to follow general principles of customer service (e g , treat the customer as you would like to be treated) rather than set scripts and procedures	82/ 73/ 69
Q9 The main thing to be a good customer service representative would be to not separate yourself from the customer as being a higher person, kind of be on the same level as them so they feel comfortable with you (*drugstore, 6, 4*)	It is important to regard the customer as an equal (D)	
Quality Assessment (quality_W)		
Q10 There is no real standard for customer service The customer provides the standard (*clothing store, 7, 2*)	I don't know how good my service is because that's something that customers decide	88/ 64/ 67
Q11 Well, to see if your customer service is good, you have to ask the customer If they think it's good, then it's good (*library, 26, 22*)	My service is good only if customers think it is good	75/ 95/ 87

B: Efficiency Service Model^c

Attribute (Attribute Label) and Representative Quotations	Scale Item	Item Loading^a
Perception of Self (self_E)		
Q12 When a customer has a question, we try to give them the best information and well—personally, that's my role When a customer asks me about an item, I try to give them both good and bad points Tell them how it would fit with their lifestyle (*cell phone, 1½, 1½*)	I am most helpful to customers when I answer questions about the products/services we offer	69/ 68/ 66
Q13 I like to be able to tell my customers that "yes, this product is right for you" and looking them in the eye (*automotive parts, 7, 3½*)	I can specify which product/ service would be best for customers if they ask	85/ 77/ 79
Q14 You can't let them see you're annoyed You have to hide it and always have to smile (*hotel front desk, 3, 2*)	I have to hide my feelings in front of customers	78/ 71/ 75
Q15 If I have problems at home with my family or there's something happening at home, I tend to be a bit dazed, a bit moody, and be more moody to the customers This can lead to me making more mistakes, such as bringing out the wrong cake (*cake shop, 3, 2½*)	My service is sometimes inconsistent because of what's happening away from work (D)	
Perception of Customer (customer_E)		
Q16 She was getting frustrated and started questioning my competence, and I was getting frustrated But the difference is that she can show she's frustrated because she's the customer, but I can't (*clothing store, 1, ½*)	Customers are allowed to behave rudely because they are "the customer"	83/ 68/ 70
Q17 Customers like to feel you've treated them like everybody else, not feel they've been treated worse than anybody So give them the same amount of time, same amount of politeness, same information (*tourist information centre, 8, 3*)	All customers like to receive the same style of service	87/ 87/ 71
Q18 I love courteous customers I like to think that I'm courteous, so I like it when I get it back It's a bit of a letdown when they don't return it (*video rental store, 2½, 1½*)	I expect customers to be courteous, and am disappointed when they are discourteous (D)	

APPENDIX A
Continued

Attribute (Attribute Label) and Representative Quotations	Scale Item	Item Loading[a]
Objective During an Encounter (objective_E)		
Q19 We have a ten-step program that we have to do for each customer They are acknowledge them when they come into the store, approach the customer, assess their needs, selection process, (*clothing store, 2½, 2*)	It's important to follow the scripts and procedures for service that my organization has set out	81/ 75/ 86
Q20 They [customers] don't actually get a lot of service these days so we try to sort of be very careful with what we say and how we treat the customer (*clothing store, 6, 4*)	While serving customers, I concentrate on making sure my words and actions are correct	89/ 76/ 73
Q21 With angry customers, even abusive customers, we're always told to continue serving them but to be calm and polite even if we're angry otherwise the customer gets more upset (*cafe, 2, ½*)	When serving customers, it's important to be polite and friendly to customers regardless of how they treat me	87/ 60/ 54
Quality Assessment (quality_E)		
Q22 I would rate it [customer service] as very good because we strive to make sure our customers are happy at all times (*fast food, 1, 1*)	My service is good because I always strive to make customers happy	93/ 51/ 55
Q23 We have steps and procedures to follow in order to reach what we call superior customer service (*clothing store, 2½, 2*)	I provide excellent customer service by following my organization's scripts and procedures	85/ 94/ 88

C. Means Service Model

Attribute (Attribute Label) and Representative Quotations	Scale Item	Item Loading[a]
Perception of Self (self_M)		
Q24 I think different techniques can be applied to each individual or customer, based on the profile they display to you (*gift store, 11, 1½*)	I have different techniques for handling different types of customers	75/ 71/ 72
Q25 You need to be able to give the right body language and gestures, to look good, and use different vocals like positive tone and vocal variety In a way being out on the information desk is like being in a play The only difference is it's performing to just one person (*shopping centre information desk, 7, 3*)	I "put on an act" when I serve customers	76/ 88/ 59
Q26 We all get together and have a good laugh and chuckle about what we did out at the customer service desk last week or what customer complaint happened or how a customer farewelled us or things like that (*department store, 4, 3½*)	There's a feeling of "us-and-them" between service staff and customers	82/ 77/ 62
Perception of Customer (customer_M)		
Q27 When you lose a sale, in a way you feel a bit upset with yourself Like no matter how hard you tried, is there something more I could have done, something else I could have shown her so that they walk out with a bag in their hand (*clothing store, 3, 2*)	How a customer responds can be influenced by the service representative	88/ 65/ 68
Q28 There's two basic types of customers One type, they like an explanation on certain matters and how you arrive to this scenario, and they tend to enjoy the background information you provide, in giving them, in serving them Where with the other type, they just want an answer, and they don't really ask for much than that (*bank loans, 10, 6*)	Customers can be categorized into distinct types that require different approaches	84/ 81/ 84
Q29 You know, if a customer stands in a certain way and with me standing in that same gesture, I know that subconsciously they think "Hey this person's like me " (*cell phone store, 2, 2*)	I can usually predict how a customer will respond to my actions (D)	
Objective During an Encounter (objective_M)		
Q30 When a customer walks in, a good rep directs them in the way he wants them to go I mean, first, you have to see what they want and what their budget is because you can't exactly sell them a home video when they want a toaster, but once you know that, then steering them to the product that the store wants sold (*electrical goods, 5, 3*)	When providing service, a service representative should focus on managing the customer	91/ 97/ 73

APPENDIX A
Continued

Attribute (Attribute Label) and Representative Quotations	Scale Item	Item Loading[a]
Q31 Some customers you get are real weird, not your type at all, but you still have to play the game, like, bluff, so they think you're their friend (*gift store, 11, 1½*)	Regardless of their true thoughts about a customer, good service representatives try to make customers think that they're friends	81/ 71/ 69
Q32 Sometimes you shuffle clothes around so that they feel they're walking into a new store all the time (*clothing store, 3, 2*)	I arrange the store surroundings to make customers behave in a certain way (D)	
Quality Assessment (quality_M)		
Q33 I'm one of the better performers, basically because I know what to achieve with each customer, and I go about getting it But it's just something that comes with experience you get on-the-job because I've been here three years (*electrical goods, 5, 3*)	Good service representatives reach their objectives with each customer	98/ 57/ 72
Q34 As you progress, you become better at doing customer service I've been in this industry for some time now, and I've learned maybe more about human nature and the ways people react and respond to different stimulus, and using that to influence them (*bank loans, 10, 6*)	A good service representative can influence customers in the way the representative wants	65/ 92/ 72
Q35 Being a main shopping industry, we strive for customer service excellence, so that's our main baby And our reputation is great so we know we're doing well on this [customer service] (*shopping centre information desk, 7, 3*)	We know our service is good because our organization has a good reputation (D)	

[a]Standardized loadings reported as (pilot/salespeople/concierges)

[b]Respondent demographics reported as (place of work, years of experience in customer service, years of job experience)

[c]Representative quotations are shown from 11 of the 15 respondents who expressed an efficiency service model Other respondents worked in a real estate agency (6,4), as a hairdresser (4, 2½), in a floor covering store (5, 3½), and in fast food (2, 1½)

Notes (D) = item was deleted from final questionnaire

APPENDIX B
Scale Items

Customer Orientation (Brown et al 2002) (Studies 1 and 2) Likert scale "strongly disagree/strongly agree"

1 *Enjoyment Dimension* ($\alpha =$ 86/ 75/ 76)
- I find it easy to smile at each of my customers
- I enjoy remembering my customers' names
- It comes naturally to have empathy for my customers
- I enjoy responding quickly to my customers' requests
- I get satisfaction from making my customers happy
- I really enjoy serving my customers

2 *Needs Dimension ($\alpha =$ 81/ 73/ 75)*
- I try to help customers achieve their goals
- I achieve my own goals by satisfying customers
- I get customers to talk about their service needs with me
- I take a problem-solving approach with my customers
- I keep the best interests of the customer in mind
- I am able to answer a customer's questions correctly

Competence (Van Dolen et al 2002), (Studies 1 and 2) Likert scale "strongly disagree/strongly agree"

1 *Task Competence* ($\alpha =$ 87/ 85/ 79)
- I was capable
- I was efficient
- I was organized
- I was thorough
- I met the customer's needs
- I performed as I expected

2 *Social Competence*[a] ($\alpha =$ 85/ 81/ 86)
- I connected to the customer's life/experiences
- I revealed personal information
- I invited the customer to reveal personal information
- I paid special attention to the customer
- I went out of my way
- I was my own person
- I was genuine

Surface Acting (Brotheridge and Lee 2003) (Study 2)

Likert scale "never/always" ($\alpha =$ 79/ 72)

1 On an average day at work, how frequently do you
- Resist expressing my true feelings?
- Pretend to have emotions that I don't really have?
- Hide my true feelings about a situation?

Deep Acting (Brotheridge and Lee 2003) (Study 2) Likert scale "never/always" ($\alpha =$ 75/ 66)

1 On an average day at work, how frequently do you
- Make an effort to actually feel the emotions that I need to display to others?
- Try to actually experience the emotions that I must show?
- Really try to feel the emotions I have to show as part of my job?

APPENDIX B
Continued

Interpersonal Dimensions (Locke 2000), (Study 2)
Likert scale "not important/extremely important"

1 *Submissiveness* (α = 79/ 83)

When I am with customers, how important is it that
- I conform to their expectations?
- I not get into an argument?
- I do what they want me to do?
- I live up to their expectations?
- I not make them angry?
- I go along with what they want to do?
- I not embarrass myself?
- they not get angry with me?

2 *Detachment* (α = 71/ 73)

When I am with customers, how important is it that
- I keep my guard up?
- They not know what I am thinking or feeling?
- They keep their distance from me?
- I appear detached?
- I not reveal what I am really like?

Additional Items

1 Gender (Studies 1 and 2)
2 Formal training in customer service (Studies 1 and 2)
3 Length of experience serving customers (Studies 1 and 2)
4 Industry (Study 1)
5 Involved in selling (Study 1)
6 Customer service performance relative to peers below average, average, or above average (Study 2)
7 Sales quotas (Study 1, Study 2 salespeople)
8 Average number automobiles sold each month (Study 2 salespeople)
9 Average number automobiles a typical salesperson in a dealership would sell each month (Study 2 salespeople)

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[a] Two items from Van Dolen and colleagues' (2002) original scale ("I was truly out of the ordinary," and "I gave the customer a break") were included in the questionnaire in Study 1, but they were not used in the analysis, because they did not perform well

Notes Likert scales are seven-point scales in Study 1 and five-point scales in Study 2 Coefficient alphas for constructs used in both Studies 1 and 2 are reported as (pilot/salesperson/concierge) Coefficient alphas for constructs used in Study 2 are reported only as (salesperson/concierge)

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Douglas E. Hughes & Michael Ahearne

Energizing the Reseller's Sales Force: The Power of Brand Identification

A manufacturer's success in the marketplace is contingent in part on its ability to energize its downstream channel members in support of its brands. Gaining the focused effort of the reseller's sales personnel is particularly important, and this has become increasingly challenging as resellers broaden their brand portfolios in the wake of industry consolidation. This study reveals a motivating influence that can potentially be harnessed by both manufacturer and channel member: identification. Using a multilevel analysis, the authors explore the sometimes conflicting impact of salesperson brand identification, salesperson organizational identification, and manufacturer–channel member control system alignment on brand and channel member sales performance. The authors also examine favorable extra-role consequences of salesperson brand identification. The results show that while organizational identification strengthens salesperson adherence to controls, brand identification can increase salesperson effort behind a specific brand, and ultimately improved brand performance, even in the face of control systems to the contrary. This suggests that suppliers can exercise influence over the reseller's sales force by strengthening the psychological connection between their brands and reseller sales personnel.

Keywords: brand identification, organizational identification, control systems, salesperson performance, sales force motivation, distribution channels, reseller

Many companies use a distribution network of independent intermediaries, relying on downstream channel members (e.g., brokers, agents, wholesalers, retailers) to sell their products effectively to other channel members and/or ultimately to the end users. While in some cases the reseller serves a single supplier, more often the reseller's product line includes products (or services) from multiple suppliers. For example, consumer products manufacturers routinely use wholesalers and/or brokers to sell to and to service retailers, a wide range of industrial products are sold through distributors, and even intangible products and services can be provided through external channel entities (e.g., independent agents). Often, these intermediaries represent multiple product lines, and given ongoing consolidation at all levels of distribution, increasingly these intermediaries represent competing products within the same product category (Gale 2005).

The challenge for the manufacturer is motivating the reseller to allocate resources on behalf of its products relative to the resources allocated in support of competitive products. Because the reseller has its own agenda that may differ from that of a manufacturer, the extent to which manufacturer and reseller goals, plans, and control systems are aligned will have a marked impact on what ultimately is executed in the market. As a result, many channel management activities initiated by the manufacturer are directed toward influencing channel member resource allocation behavior (Anderson, Lodish, and Weitz 1987).

The relative effort that reseller salespeople expend on the manufacturer's brands versus that expended on in-house competitive brands is a particularly critical resource allocation problem. A manufacturer's interests are best served if the reseller's salesperson is highly focused on its products relative to those provided by other manufacturers. However, the manufacturer has no direct control over the salesperson, and the reseller might have completely different priorities, whether it is to balance efforts across the portfolio or to concentrate on certain brands/products according to their relative profit contribution or other considerations. To protect its own interests, the reseller typically has formal control systems in place to direct the behavior of its sales personnel. These systems tend to be a combination of output controls (i.e., objective performance standards that are tracked and evaluated) and behavioral controls (i.e., monitored activities considered important in achieving desired results) (Anderson and Oliver 1987). Formal control systems have been found to be effective in reducing role ambiguity and role conflict while increasing salesperson motivation and performance (Baldauf, Cravens, and Piercy 2005).

This study explores an alternative, less formal mechanism of influence potentially available to both manufacturer and reseller in their attempts to gain the reseller salesperson's allegiance: identification. Drawing from social identity theory (Tajfel and Turner 1985), we conceptualize

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organizational identification as occurring when an employee forms a psychological connection with the organization by incorporating the attributes that he or she believes define the organization into his or her own self-concept (Dutton, Dukerich, and Harquail 1994). Identification can serve as a powerful motivating influence for a person and an important one to the firm because, as self-goals and organization goals merge, the realization of the latter becomes more intrinsically satisfying. Organizational identification has been shown to have a positive impact on several desirable work-related outcomes, such as job satisfaction (Van Knippenberg and Van Schie 2000), employee retention (Mael and Ashforth 1995), organizational citizenship behaviors (Van Dick et al. 2006), organizational commitment (Meyer, Becker, and Van Dick 2006), and job performance (Ahearne, Bhattacharya, and Gruen 2005).

Not yet researched, however, is a notion highly relevant to the issue of capturing reseller salesperson share of mind—namely, that employees may identify not only with their company but also, to a greater or lesser degree, with particular brands that are represented by the firm, along with related implications. Moreover, few empirical studies consider what may occur when identification with different foci and/or with normative pressures conflicts (Richter et al. 2006). An important distinction to be examined here is the extent to which the salesperson identifies with his or her employing company (the reseller) and the extent to which the salesperson identifies with a manufacturer's brand. We propose that these two forms of identification interact differently with the reseller's control systems to influence salesperson effort and sales performance. The findings are strengthened through the use of a multilevel analysis that incorporates multiple sources of data across several companies. Although we believe that the tested relationships should generalize across different industries, products/services, and types of distribution channels, the context of this study is a three-tier distribution system in which a consumer products manufacturer sells its products through a wholesaler (distributor), which in turn sells to retail accounts in a designated territory.

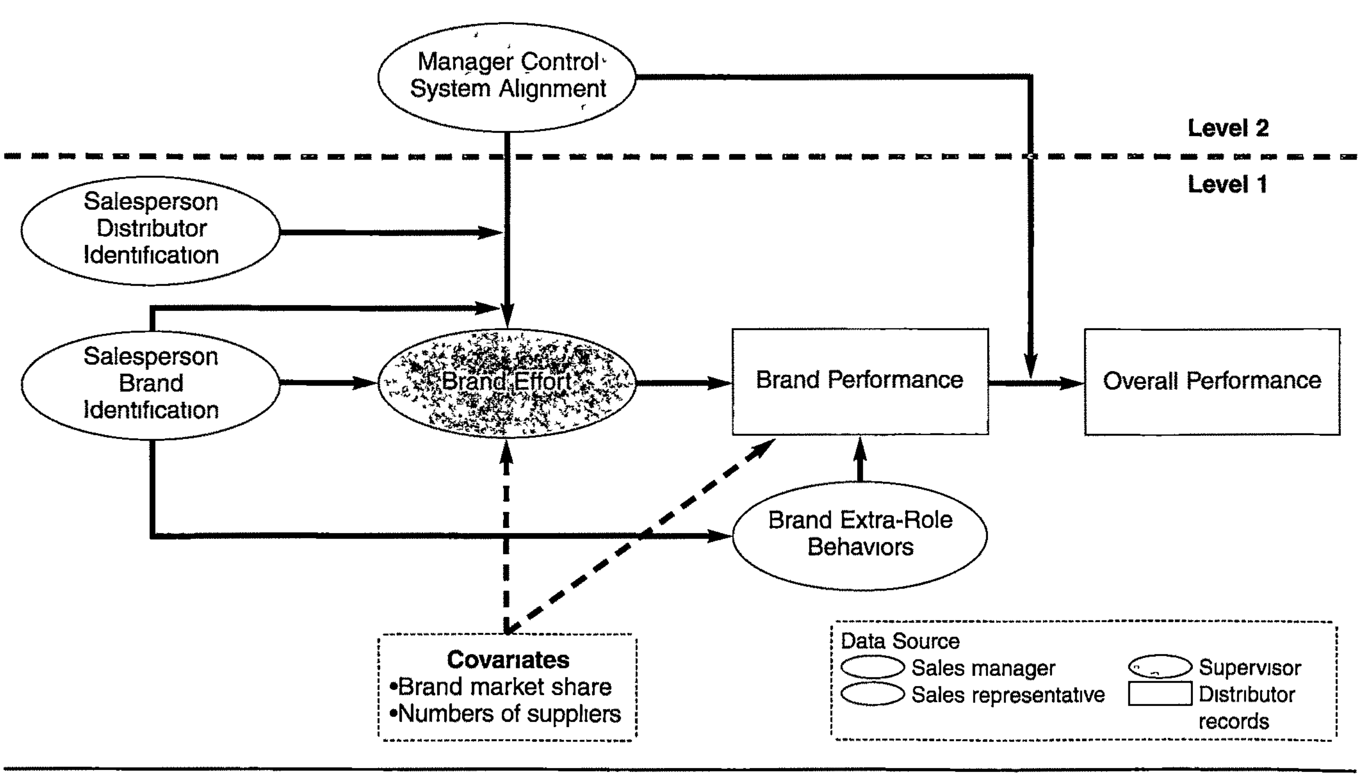
Conceptual Background and Hypotheses

As Figure 1 shows, we expect that the extent to which reseller sales control systems are aligned with manufacturer goals ("control system alignment") will be moderated by the extent to which the reseller salesperson identifies with two potentially competing organizational entities: the manufacturer's brand ("brand identification") and the reseller ("distributor identification"). We further suggest that this relative effort will affect the salesperson's brand sales performance and overall sales performance, the latter being moderated by the degree to which the reseller's sales control systems are aligned with manufacturer goals. Finally, we suggest that the value of brand identification goes beyond its influence on in-role effort and sales performance, by separately leading to positive extra-role behaviors that are directed at and supportive of the brand.

Control System Alignment

Athough manufacturers and their distribution channel intermediaries are interdependent, challenges in coordinating

FIGURE 1
Hypothesized Model



activities and conflict between channel members are inevitable because of their differing perspectives and goals (e g , Gaski 1984) Each entity strives to maximize its profit, and the manufacturer's brands typically represent only a portion of the downstream channel member's portfolio of products, giving rise to resource allocation issues (Anderson, Lodish, and Weitz 1987) Critical to the manufacturer is its ability to influence the channel intermediary to increase its effort on the manufacturer's products and brands We define control system alignment as the extent to which the control systems a channel member puts in place to direct and motivate its own sales personnel are aligned with supplier goals as they pertain to a particular brand during a given time frame

In a marketing and sales context, the manufacturer must be concerned with two relevant relationships pertaining to goals and control systems (1) the manufacturer–channel member and (2) the channel member–channel member salesperson The manufacturer's first and primary point of contact is with the channel member's management team, and a key purpose of this interaction is to influence the extent to which the channel member prioritizes, supports, and puts necessary control systems in place to market the manufacturer's brands effectively downstream Because the manufacturer relies on the channel member salesperson to sell its products downstream, an important element of this is the amount of focused effort the salesperson expends on each of the products or brands that he or she is responsible for selling Depending on any number of factors, channel member management might put control systems (e g , performance plans with formalized behavioral or outcome goals, incentives, differential compensation) in place that encourage the salesperson to put forth more or less effort on certain brands versus others To the extent that these control systems coincide with the manufacturer's priorities, the manufacturer's interests are well served because process motivation theories predict that the salesperson will be motivated to act in a manner consistent with them (Ambrose and Kulik 1999, Steers, Mowday, and Shapiro 2004)

We investigate a pervasive but less obvious motivational influence that could compromise these assumptions identification Goal theorists recognize that behavior is influenced by the extent to which people are personally committed to their goals (Locke and Latham 2004) and argue that externally derived goals are less protected from competing desires and temptations than goals that arise autonomously from personal values (Meyer, Becker, and Vandenberghe 2004) The two potentially competing influences on the salesperson's response to company-initiated goals pertaining to brand emphasis are his or her identification with the company for which he or she works and his or her identification with the brand that he or she represents

Social Identity Theory, Organizational Identification, and Brand Identification

Social identity theory asserts that self-concept is derived in part by psychological membership in various social groups (Tajfel 1978) Among the assumptions underlying social identity theory are that people strive for positive self-esteem, that self-esteem is in part derived from social group membership, and that a positive social identity is maintained or strengthened through in-group–out-group comparisons (Van Dick et al 2004) Social identity theory has been used extensively as a basis for understanding a person's psychological attachment to an organization (e g , Ashforth and Mael 1989, Bhattacharya, Rao, and Glynn 1995, Smidts, Pruyn, and Van Riel 2001) When a person identifies with an organization, his or her perceptions of membership become embedded in a general self-concept (Riketta, Van Dick, and Rousseau 2006) Thus, organizational identification can be conceptualized as the perception of oneness with the organization (Ashforth and Mael 1989), occurring when a person's beliefs about the organization become self-referential or self-defining (Pratt 1998) As people identify more strongly with the organization, they become more intrinsically motivated to behave in a manner consistent with its interests (Van Knippenberg and Sleebos 2006) Acting on behalf of the organization becomes congruent with self-interests

It is worth noting that organizational identification differs from the related concepts of job involvement and organizational commitment Involvement has been defined in a variety of ways depending on context, but in general, it has to do with the perceived relevance or importance of an object or activity based on a person's inherent needs, values, and interests (Andrews, Durvasula, and Ahkter 1990) In the work environment, involvement has been alternatively defined as a psychological connection with a person's work functions, the importance that work has in a person's life, the degree to which a person is engaged in the job or in carrying out specific work tasks, or some combination of these elements (e g , Keller 1997, Morrow 1983, Rabinowitz and Hall 1977) Several researchers (e g , Mael and Tetrick 1992, Riketta 2005) have demonstrated empirically that involvement and identification are distinct

Organizational commitment is widely considered a three-dimensional construct (Meyer and Allen 1991) comprising affective attachment to the organization, perceived cost of leaving the organization, and internalized obligation to remain in the organization In a channel context, organizational commitment has been conceptualized similarly (Kim and Frazier 1997) but also as a willingness to make short-term sacrifices to maintain a long-term relationship (Anderson and Weitz 1992) and as a state of attachment consisting of an economic calculation of the benefits of association and disassociation with a channel member along with an emotional feeling of allegiance and faithfulness to the channel member (Gilliland and Bello 2002) While identification involves a sense of shared fate and perceived similarity with the organizational entity, commitment is essentially an attitude toward the organization that develops from exchange-based factors (Van Dick 2004) The narrower, self-definitional aspect of organizational identification distinguishes it conceptually and empirically from organizational commitment (Bergami and Bagozzi 2000, Van Knippenberg and Sleebos 2006)

An employee's identification with the company for which he or she works is only one type of organizational identification People are apt to identify with any group that contributes to a positive sense of self (Ellemers, De Gilder, and Haslam 2004), and multiple potential foci of identification within a work setting offer a person the self-enhancing sense of inclusion and distinctiveness derived from group membership (e g , occupation, industry, company, division, work unit, people) (Riketta and Nienaber 2007, Sluss and Ashforth 2007) Although empirical evidence is limited, researchers have speculated that the compatibility (or lack thereof) of goals, values, and norms among such collectives supports or undermines the relative identification with each collective and corresponding outcomes (Meyer, Becker, and Van Dick 2006)

Most research on workforce-related social identification has centered on the congruence of self-identities with formal organizational identities (e g , a person's employer), however, it is plausible that salespeople also identify to varying degrees with upstream suppliers and even with individual brands We conceptualize brand identification as the degree to which a person defines him- or herself by the same attributes that he or she believes defines a brand Formal membership in a group is not required for identification (Pratt 1998), and just as consumers prefer brands that elicit associations consistent with self-identities (either actual or desired), self-congruity theory would suggest that salespeople form a stronger bond with brands when brand and self-identities converge (Aaker 1999, Burmann and Zeplin 2005, Sirgy 1982)

Although the extent to which salespeople identify with the brands they sell has not yet been well researched, there is a rich literature on consumer–brand relationships from which to draw inferences What people consume, possess, and associate with contributes to their self-definitions, a concept dating back at least as far as William James (1890, p 291), who asserted that "a man's self is the sum total of all that he can call his " Brands can act as symbolic resources in constructing social identity (Elliott and Wattanasuwan 1998), allowing people to appropriate meaning for themselves and communicate that meaning to others (McCracken 1988) Not only do people use objects to remind themselves of who they are and to indicate to others who they are (Wallendorf and Arnould 1989), but they also often imbue brands with human characteristics that define a distinct brand personality (Aaker 1997), leading to the formation of relationships with brands that reinforce self-concept through mechanisms of self-worth and self-esteem (Fournier 1998) Brand identification, as we conceptualize here, is a social construction that involves the integration of perceived brand identity (or brand image) into self-identity, brand identity referring to the set of brand associations from which a person derives functional, emotional, and self-expressive benefits (Aaker and Joachimsthaler 2000) Donavan, Janda, and Suh (2006) explore the idea of brand identification in the context of a sports franchise and find that it leads to heightened self-esteem and an increased propensity to purchase brand-related merchandise for personal use and for others

Firms spend considerable resources attempting to build psychological connections between their brands and consumers through advertising and other marketing communications We suggest that employees are not immune to these kinds of influences Indeed, given their higher level of exposure to and involvement with the brands and the idea that the brand's success or failure has ramifications to the employee's economic well-being, it is possible that such an effect is even more pronounced As one salesperson participating in prestudy qualitative work stated, "My customers call me 'Stan, the [brand name] Man,' and that's kind of the way I see it too I bet half of my wardrobe has a [brand name] logo on it, and when [brand] does well, I feel good inside I want everything I sell to succeed, but with [brand], it's personal "

In summary, people are apt to identify with various organizational entities, and identification with such entities can be mutually supportive or disruptive (Ellemers and Rink 2005, Meyer, Becker, and Van Dick 2006) In this study, we specifically examine the extent to which the distributor salesperson identifies with his or her employer (distributor identification) and the extent to which the salesperson identifies with a focal brand (brand identification) from a supplying manufacturer Prior research has suggested that in nested or hierarchical forms of identification, identification with the lower-level or more proximal entity tends to be stronger and, thus, more prescriptive of related outcomes than identification with the subsuming entity For example, identification with a work group under most circumstances will be more salient than identification with the company (Van Knippenberg and Van Schie 2000) However, in the circumstances we examine, there is no clear nesting relationship, and thus the relative strength and salience of identification is ambiguous

Because organizational identification represents the cognitive link between the definitions of the organization and the self (Porter et al 1974), it follows that there is an increased linkage between organizational goals and self goals when organizational identification is high Because self goals exercise a strong motivating effect on behavior (Brown, Jones, and Leigh 2005), organizational identification should moderate the impact of distributor control systems on the relative effort the salesperson places on behalf of the organizational entity More specifically, when salespeople strongly identify with their employer (the distributor) or a particular brand they sell, they become vested in its success or failure Therefore, brand identification should influence the amount of effort a salesperson places on a brand, while amplifying the positive effects of manufacturer–distributor goal alignment and accompanying control systems on the effort expended on that brand Conversely, if brand identification is low, the control system alignment–brand effort link should be weakened

Effort has been defined as the "force, energy, or activity by which work is accomplished" (Brown and Peterson 1994, p 71) However, given a wide assortment of brands in a salesperson's portfolio, a finite number of hours in a day, and a limited number of minutes in front of a buyer, the salesperson must make choices regarding what he or she focuses on Time spent selling one brand necessarily means less time spent selling another brand Therefore, expanding slightly on the preceding definition of effort, we conceptualize brand effort as the force, energy, or activity expended against the focal brand relative to that expended against all other brands

The effects of distributor identification on relative brand effort are likely more complex. If distributor identification is high, the interests and goals of the distributor become more salient, and thus relative brand effort would be contingent on whether the goals of the brand were consistent with the goals of the company. If control systems support the brand, a salesperson who strongly identifies with the distributor is likely to follow suit and increase effort behind the brand. Conversely, if control systems do not support the brand (i.e., they are focused instead on other brands within the salesperson's portfolio), the distributor-identifying salesperson is likely to decrease effort on the brand in favor of these other brands.

In summary, because the salesperson is prone to act in accordance with the groups with which he or she identifies, strong identification with a particular brand and/or with the distributor gives rise to desires and temptations that either support or conflict with the employer's direction. When the salesperson identifies with an entity, goals in support of this entity are more likely to be perceived as more autonomous and self-controlled, resulting in stronger positive behavior in support of those goals. However, goals that run counter to the identified identity are likely to be perceived as less autonomous, less personally relevant, and potentially self-threatening, leading to reduced effort in support of the goals. Thus:

H_1: Higher levels of brand identification (a) result in increased brand effort regardless of whether control systems are aligned with the brand and (b) strengthen a favorable impact of high control system alignment on brand effort while softening a negative effect of low control system alignment on brand effort.

H_2: Higher levels of distributor identification strengthen brand effort when control system alignment is high but weaken brand effort when control system alignment is low.

Performance

Effort is one outcome of motivation, and many studies have shown a positive relationship between effort and various performance measures (e.g., Brown, Cron, and Slocum 1997; Brown and Peterson 1994). We consider two types of performance measures in this study: brand sales performance and overall sales performance. Brand sales performance is defined as the percentage of sales the focal brand represents out of the total sales volume produced by the salesperson; therefore, in a sense, it is a "share of portfolio" or "share of total sales" measure that reflects the relative success of the brand versus the other brands the salesperson sells. While share of market is a measure manufacturers use more routinely to judge the relative strength of a brand in the marketplace, a share of portfolio approach provides an indication as to the importance of the brand to the channel member's business and thus can serve as a source of manufacturer power or leverage over the channel member. However, the distributor is less concerned about the sales of a particular brand or supplier than about the sales of its entire collection of brands in the aggregate. Thus, overall sales performance is introduced as an outcome of greater interest to the distributor, conceptualized here as the sales trend improvement of the salesperson's entire portfolio of brands during a defined period.

In general, we might expect that strong sales performance on one brand would have a favorable impact on a salesperson's overall sales performance. However, the salesperson is responsible for selling a large number of brands and, because of time and other constraints, must make choices regarding the brands on which to focus his or her efforts. If the effort placed on one brand takes away effort from other brands that are more important to the distributor, it is conceivable that brand sales performance could have an adverse effect on overall sales performance. Because we assume that the profit-maximizing distributor will align its control systems with a given brand only when doing so is in its best interests, higher brand sales performance is likely to result in higher overall sales performance only when control system alignment is high. In other words, if a salesperson focuses on a brand that the distributor is not supporting, the impact of that brand's results on the salesperson's overall sales will be weakened. Conversely, if the salesperson achieves strong sales performance on a brand that the distributor is supporting, we would expect a positive relationship between that salesperson's brand performance and overall sales performance. Thus:

H_3: Greater brand effort results in increased brand sales performance.

H_4: Brand sales performance interacts with control system alignment to affect overall sales performance such that greater brand sales performance results in increased overall sales performance only when control system alignment is high.

Other Consequences

The literature points to other desirable consequences of organizational identification beyond effort and performance, such as increased job satisfaction, reduced employee turnover, enhanced cooperation, and organizational citizenship behaviors (e.g., Ahearne, Bhattacharya, and Gruen 2005; Mael and Ashforth 1995; Richter et al. 2006). Organizational citizenship behaviors are discretionary behaviors beyond formal job requirements that promote the effective functioning of the organization. The relationship between organizational identification and organizational citizenship behaviors stems from the desire to protect, support, and improve the organization that surfaces when organizational identities and self-identities converge. Organizational identification aligns the interests of the organization with self-interest, and thus engaging in positive extra-role behaviors is a natural extension of the self.

This raises a noteworthy question in the context of this study and one that is of great importance to the manufacturer in particular: Are there corresponding brand-enhancing extra-role behaviors (separate from company-oriented organizational citizenship behaviors) that might result from brand identification? For example, it could be that the salesperson who identifies with a particular brand, for the same self-enhancing and self-protecting reasons we discussed previously for organizational citizenship behaviors, is prone to personally consume the brand at home and in public settings, to make the brand available at parties/gatherings when appropriate, to recommend it to friends and defend it from criticism, to encourage other employees and management to focus on the brand, to confront or report colleagues for behavior detrimental to the brand, to report competitive initiatives that threaten the brand, and (in a consumer packaged goods environment) to correct out-of-stock situations, pull up facings, rebuild displays, place point-of-sales (POS) materials when shopping on personal time, and so forth All these things are of great benefit to the manufacturer and to the brand itself Thus, we define brand extra-role behaviors as proactive behaviors on the part of the salesperson that are outside the scope of the job description but that contribute to the viability and vitality of the brand The notion of separate extra-role behaviors related to a specific organizational identity is consistent with Ullrich and colleagues' (2007) "identity-matching principle," which suggests that the relationship between identification and relevant behavioral outcomes is stronger when they address the same level of categorization Although in most cases such extra-role behaviors could be expected to benefit both brand and distributor, it is possible that such behaviors could be supportive to the brand but not maximally effective for the distributor (if those behaviors instead could have been directed at more important brands within the distributor's portfolio) or, in extreme cases, even counterproductive to the distributor (e g , offering excessive brand promotional support to retailers) Although this latter point is worthy of investigation, here we focus only on the positive benefits of the extra-role behavior to the brand Thus

H_5 Brand identification is associated with salesperson demonstration of brand extra-role behaviors

H_6 Brand extra-role behaviors have a positive influence on brand performance

Methodology

Sample

Data were gathered from 18 large distributor sales organizations located in metropolitan areas across the United States The distributors represent a shared set of consumer products manufacturers operating in the same product category, and they perform the function of warehousing the various manufacturers' brands and selling them to retailers in assigned exclusive geographic areas Among the distributor salesperson's brand-building responsibilities are securing and increasing distribution, expanding shelf space, selling product displays, placing POS materials, selling promotions, and so forth Although the distributors selected for the study were largely homogeneous with respect to the primary suppliers they represent, we controlled for externalities pertaining to company and geographic differences Specifically, we included brand market share and the number of suppliers each distributor salesperson represents as covariates in the analysis The organization structure was consistent across organizations, with each salesperson reporting to a route supervisor, who in turn reports to a distributor sales manager Surveys were administered to the salespeople, route supervisors, and sales managers in each operation, and objective sales performance data were obtained from company records for the outcome measures (described subsequently)

In total, survey questionnaires were delivered to 260 salespeople, 59 route supervisors, and 18 sales managers, with a response rate of 81%, 100%, and 100%, respectively Sales managers provided control system alignment measures, route supervisors rated salesperson brand effort, and salespeople provided all other latent measures The surveys were distributed to the sales force at company offices, sales personnel were asked to complete the survey at their leisure and then return the survey directly to the researcher using provided self-addressed postage-paid envelopes Merging all three data sets with objective company records (brand and company sales performance data) resulted in a data set containing 192 full data records, for a usable response rate of 74% Because each salesperson rated four separate brands, there were 768 (4 × 192) possible observations However, because 25 sales representatives were responsible for selling (and thus reported on) only three of the four focal brands, there were 743 actual usable observations The average respondent was 33 years of age and had 8 5 years of experience in sales, 5 8 years with his or her company, and 3 5 years in his or her current position Ninety-three percent were men, not atypical for this particular industry, with an ethnicity breakdown as follows 60% white, 25% Hispanic, 6% African American, and 9% Asian/other Thirty-four percent of respondents had a college degree or higher

Construct Measures

We assessed the constructs with a combination of proven and new scales, the latter of which we developed in accordance with the procedures that Churchill (1979) outlines For each of the new scales, we developed an initial pool of items using exploratory research, we refined these items after receiving expert feedback from academic researchers and distributor general managers and then pretested them with a small sample of distributor sales personnel

Control system alignment refers to the extent to which distributor control systems are aligned with manufacturer brand goals To assess this construct, distributor sales managers were surveyed using a new scale (see the Appendix) that asked the managers to assess the extent to which incentives, commissions, performance plan objectives, sales meetings, and ride-with activity for a designated period (a specific month) focused on a particular brand This was completed for each of the four brands, with the sales manager allocating 100 points among the four brands and "all other brands" carried by the distributor

Distributor identification and brand identification were individually rated through self-reports (salesperson) using an eight-point visual and verbal representation of the perceived overlap of salesperson and distributor/brand identity that Bergami and Bagozzi (2000) developed This was completed separately for identification with the distributor and for identification with each of the four brands included in the survey Before rolling out the formal survey, we tested the questionnaire with a small sample of distributor salespeople and interviewed them after they completed it to ensure that their interpretations of all questions matched our intentions. These pretests showed that an illustration was helpful in ensuring consistent interpretation of the identification scale across respondents, so we included an example on the survey form before providing it to the respondents.

Brand effort refers to the force, energy, or activity expended by the salesperson against the focal brand relative to that expended against all other brands. This was assessed by the line manager overseeing each salesperson (i.e., the route supervisor) using a new seven-point Likert scale (see the Appendix) that taps into the execution responsibilities of the salesperson. Here, the supervisor rated each of his or her sales representatives on the effort exerted against certain brands in performing particular selling and merchandising activities that are part of the salesperson's ongoing responsibilities (e.g., selling promotions, selling/building displays, expanding shelf space, increasing distribution, placing POS materials). This assessment was completed for each of the four brands included in the survey. Given the low span of control for each supervisor, the strong emphasis on ride-with activity in each distributor operation, and the managerial expectations that the route supervisor will be monitoring salesperson selling and merchandising activities, the route supervisor is in a particularly good position to assess salesperson effort on these tasks. In addition, the multisource nature of the data greatly minimizes the risk of common method bias.

We measured brand extra-role behavior with a new five-point Likert scale (see the Appendix) that asked salespeople to rate the extent to which they engage in various brand-supportive activities that are beyond the scope of the job description but that promote the brand in some way (e.g., "I serve this brand at parties/gatherings," "I encourage other employees to focus their efforts on this brand," "I correct out-of-stock situations, pull up facings, rebuild displays, place POS materials, and so forth, in retail accounts on personal time for this brand, for example, when shopping while off work").

Brand sales performance is an objective measure gleaned from distributor sales reports that assesses the proportion of the salesperson's total monthly volume that is accounted for by the brand. In other words, it is defined as the percentage of sales that the focal brand represents out of the total sales volume produced by the salesperson for the period of interest in the study (in this case, a specific month) and thus can be considered a brand's "share of total sales" for each salesperson. A similar approach has been used to assess constructs such as share of customer or share of wallet (Ahearne, Jelinek, and Jones 2007). As we discussed previously, this is an important measure from the perspective of the manufacturer because it indicates the relative performance of its brand versus that of other brands sold by the salesperson.

Overall sales performance, an outcome of greater interest to the distributor, is an objective measure obtained from distributor sales records that computes the sales trend improvement for each salesperson's entire brand portfolio during the study period.

Because there was geographic variation in market share among the focal brands, as well as some differences in the total number of suppliers represented across distributors, and because it is possible that these variables could influence both brand effort and brand sales performance for a given salesperson, we also included brand market share and number of suppliers as covariates in the model.

Measurement Model

We conducted an exploratory factor analysis in SPSS to evaluate the reflective scales, using principal components analysis and a Varimax rotation. All items loaded onto their factors as anticipated, though brand extra-role behavior split into two separate factors: one reflecting brand usage (e.g., "I personally consume this brand at home," "I serve this brand or make it available at parties/gatherings") and one reflecting extra-role brand support (e.g., "I encourage other employees to focus their efforts on this brand," "I correct out-of-stock situations, pull up facings, rebuild displays, place POS materials, and so forth, in retail accounts on my own personal time for this brand"). Given the result of the exploratory factor analysis and that, to date, this notion of brand-specific extra-role behaviors has been unresearched and thus is worthy of exploration, we elected to treat the two factors as two separate latent variables, so that we could assess potential differential effects of brand identification on them. Factor loadings for all constructs ranged from .66 to .91 with no unusually high cross-loadings. We calculated reliabilities for each scale and deemed them to be acceptable (all above .86, see Table 1).

Next, we conducted a confirmatory factor analysis (CFA) to test the discriminant validity of the measures. Although the CFA chi-square statistic (1886, d.f. = 306) was significant, an examination of the comparative fit index (CFI), root mean square error of approximation (RMSEA), and standard root mean square residual (SRMR) estimates (.94, .08, and .04, respectively) suggests that the measurement model fits the data well. Values for the CFI above .90 and close to .95 are considered desirable, while RMSEA and SRMR estimates less than or equal to .08 are considered indicative of a good fit (Hu and Bentler 1999; Kline 2005). All factor loadings of the indicators to their respective latent constructs were significant. Moreover, all individual reliabilities were larger than .86, the lowest composite reliability was .83, and the lowest average variance extracted was .56, providing evidence that all constructs possess adequate reliability and convergent validity (Bagozzi 1980; Fornell and Larcker 1981). In addition, all squared correlations between the latent constructs were smaller than the average variance extracted from the respective constructs, in further support of the measures' discriminant validity (Fornell and Larcker 1981).

Analytic Approach

Because the theoretical model is multilevel and some of the data could vary across the 72 distributor–brand clusters and among salespeople within clusters, thus violating the assumption of independence, it was important to test for the suitability of the multilevel analysis. To determine whether

TABLE 1
Construct Reliabilities and Correlations

	1	2	3	4	5	6	7	8
1 Control systems	1 00							
2 Brand identification	30*	1 00						
3 Distributor identification	06	34*	1 00					
4 Brand effort	55	35*	– 02	1 00				
5 Extra-role brand support	39*	45*	21*	38*	1 00			
6 Brand usage	50*	47*	07	45*	58*	1 00		
7 Brand performance	72*	32*	09	51*	34*	52*	1 00	
8 Overall performance	02	– 01	– 01	01	– 02	– 02	0	1 00
M	17 4	4 6	5 4	4 5	3 6	3 0	1	1 0
SD	15 9	1 9	1 9	1 6	1 3	1 4	1	1
α	99	—	—	97	87	92	—	—
ρ	95	—	—	94	83	87	—	—
AVE	61	—	—	56	56	78		

*$p < 05$

Notes α = Cronbach's index of internal consistency reliability, ρ = Bagozzi's (1980) composite reliability index, and AVE = Fornell and Larcker's (1981) index of the average variance extracted by the construct

a two-level approach was warranted, we examined intraclass correlation coefficients (ICCs) and corresponding design effects to ascertain the extent of systematic group-level variance (Duncan et al 1997) The resultant ICCs indicate that the proportion of total variance accounted for by between-cluster variance is of sufficient size to substantiate a multilevel approach In addition, design effects, calculated by multiplying the ICC by (average cluster size – 1) and adding 1, were generally greater than 2, suggesting that a multilevel structure should not be ignored (Muthen and Satorra 1995) Consequently, we used a multilevel structural equation model, using MPlus 5 and estimated with full maximum likelihood, for the analysis to account for the hierarchical structure of the data (Raudenbush and Bryk 2002) This has the advantage over other hierarchical linear modeling methods of enabling us to model both structural and measurement models simultaneously In this study, control system alignment varies by distributor–brand cluster, therefore, we model it as a Level 2 variable We model the remaining constructs as Level 1 variables

As Figure 1 shows, three of the hypothesized relationships reside within Level 1 and thus can be represented as simple linear regressions However, the outcome variable overall sales performance is a function not only of brand sales performance but also of Level 2 variable control system alignment Here, the analysis can be thought of as including two steps, though the two-level modeling technique incorporates these steps into a single model Step 1 regresses overall sales performance on the Level 1 predictor variable brand sales performance

$$OP_{ij} = \beta_{0j} + \beta_{1j}(BP_{ij}) + r_{ij},$$

where OP_{ij} is salesperson i's overall sales performance across cluster j, BP_{ij} is the brand sales performance of salesperson i in cluster j, and r_{ij} is an error term assumed to be distributed $N(0, \sigma^2)$

In Step 2, the regression parameters (intercept and slope) from Step 1 become the outcomes variables and are regressed on control system alignment

$$\beta_{0j} = \gamma_{00} + \gamma_{01}CS_j + u_{0j}, \text{ and}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}CS_j + u_{1j},$$

where CS_j represents the control system alignment for cluster j Thus, these two equations capture the variation present at Level 2 Combining the two sets of equations yields the following

$$OP_{ij} = \gamma_{00} + \gamma_{01}CS_j + \gamma_{10}(BP_{ij}) + \gamma_{11}CS_j(BP_{ij})$$
$$+ u_{0j} + u_{1j}(BP_{ij}) + r_{ij}$$

Thus, the effects of control system alignment, brand performance, and the cross-level interaction of control systems alignment with brand performance on overall sales performance are captured by γ_{01}, γ_{10}, and γ_{11}, respectively

Predicting brand effort (i e , the impact of control system alignment, brand identification, distributor identification, and the cross-level interaction of control system alignment with brand identification and distributor identification) involves a similar hierarchical approach

$$BE_{ij} = \beta_{0j} + \beta_{1j}(BI)_{ij} + \beta_{2j}(DI)_{ij} + r_{ij},$$

$$\beta_{0j} = \gamma_{00} + \gamma_{01}CS_j + u_{0j},$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}CS_j + u_{1j}, \text{ and}$$

$$\beta_{2j} = \gamma_{20} + \gamma_{21}CS_j + u_{1j}$$

Thus,

$$BE_{ij} = \gamma_{00} + \gamma_{01}CS_j + \gamma_{10}(BI)_{ij} + \gamma_{11}CS_j(BI)_{ij} + \gamma_{20}(DI)_{ij}$$
$$+ \gamma_{21}CS_j(DI)_{ij} + u_{0j} + u_{1j}(BI)_{ij} + u_{1j}(DI)_{ij} + r_{ij}$$

Four brands are observed for each of the 18 distributors in the study, thus, Distributor X_{1-18}, Brand Y_{1-4} represents the 72 clusters used as the Level 2 grouping variable Having 72 clusters rather than 18 enables us to overcome a lack-of-power concern in multilevel structural equation modeling with fewer than 30 groups (Kreft and De Leeuw 1998) However, because this simultaneously creates a nesting issue in that each salesperson has rated four brands, we included three dummy variables in the analysis that correspond to the brands In doing so, we control for differential effects of the various brands included in the analysis and, as such, reduce the possible bias associated with the salesperson reporting on more than one brand Furthermore, to alleviate potential concerns regarding non-i i d observations, we tested the model separately for each of the four brands using path analytic techniques, with distributors (n = 18) as the grouping variable The results were consistent with the aggregated approach, providing evidence that they are unaffected by nesting of observations within salesperson Finally, although there is no theoretical justification for modeling the data at the supervisor level, since the supervisor simply serves as a data source, we estimated the ICCs and corresponding design effect for brand effort using "supervisor" as the grouping variable to ensure that ignoring this potential nesting level had no substantive effect on the results Indeed, the design effect is less than 2, in support of this approach

Results

Model Comparison and Tests of Hypotheses

In accordance with procedures that Mathieu and Taylor (2007), MacKinnon and colleagues (2002), and Baron and Kenny (1986) suggest, we fit several structural models to test the direct and intervening effects represented in the conceptual model To assist with the interpretation of cross-level interactions and the magnitude of effects among differently scaled variables, we first standardized the independent variables in the model (i e , control system alignment, brand identification, and distributor identification variables), with higher values representing greater amounts of each variable We chose to grand-mean-center them to aid in interpretation Grand-mean-centering of explanatory variables provides the "advantage that variances of the intercept and the slopes have a clear interpretation They are the expected variances when all explanatory variables are equal to zero, in other words the expected variances for the 'average' subject" (Hox 2002, p 56)

Because standard fit indexes are not available with the numerical integration procedure used by MPlus to estimate a multilevel model with cross-level interactions, we employed a log-likelihood difference test (–2 × difference in log-likelihoods ~ χ^2, d f = number of freed paths) to compare the fit of evaluated nested models, and we used Akaike's information criterion (AIC) and Bayesian information criterion (BIC) to compare the fit of selected nonnested models

We first ran an unconditional (intercepts only) model to examine the proportion of between variance to total variance for the dependent variables Intraclass correlation coefficients of 49 for brand effort, 91 for brand performance, 39 for brand usage, 15 for brand extra-role behaviors, and 13 for total sales performance, with accompanying design effects (given an average cluster size of 10 3) ranging from 2 2 to 9 4, substantiated our multilevel design Next, we fit a baseline model that estimated only the direct effects of control systems alignment and brand identification on brand performance by eliminating the paths to and from mediating variable brand effort, while retaining brand effort in the model The results indicate positive relationships between control system alignment and brand performance (β = 26, $p <$ 05) and between brand identification and brand performance (β = 42, $p <$ 05), in support of the overall framework of the model Next, we estimated the hypothesized model minus the interactions A comparison of AIC and BIC values confirms that this less restricted model fits better than the direct effects–only model (68 lower AIC, 45 lower BIC for the less restricted model) This improved model reflects positive relationships between brand identification and brand effort (β = 18, $p <$ 05) and between brand effort and brand performance (β = 42, $p <$ 05), fulfilling additional requirements for a mediated structure (i e , significant antecedent–final outcome and mediator–final outcome relationships) (Baron and Kenny 1986)

Next, we estimated the hypothesized model, and a log-likelihood difference test confirmed that the inclusion of the random slope effects (i e , cross-level interactions) provides a stronger fit to the data (χ^2 = 2300, d f = 4, $p <$ 05) than the nested model that did not include these moderating effects We summarize the results of this model as follows in the context of the hypotheses

A nonsignificant γ_{11} coefficient and significantly positive γ_{10} coefficient in the foregoing equations indicate a positive relationship between brand identification and brand effort across all levels of control system alignment and of control system alignment across all levels of brand identification (β = 16, $p <$ 05), in support of H_{1a} but not H_{1b} Thus, when a salesperson identifies with a given brand, he or she is more likely to expend effort against that brand relative to other brands in the portfolio, regardless of whether distributor control systems support the brand We also find that distributor identification and control system alignment positively interact to influence brand effort (β = 16, $p <$ 05), as represented by a positive corresponding slope coefficient (γ_{21}) in the equations, which in turn supports H_2 In other words, when a distributor puts sales controls in place behind a particular brand and the sales force identifies with the distributor, there is an accompanying increase in the effort a salesperson places on that brand relative to other brands in the portfolio In the next section, we explore and discuss the interpretation of this interaction further

A positive relationship between brand effort and brand performance substantiates H_3 The significant, positive interaction between control system alignment and brand performance, combined with the negative relationship between brand performance and overall sales performance, lends support to H_4, which posits that overall sales performance results from strong brand performance only when control system alignment is high

Finally, H_5 pertains to another favorable outcome predicted to be positively associated with brand identification—the performance of brand-specific extra-role behaviors that, over time, potentially could enhance the brand's viability in the marketplace Consistent with H_5, brand identification was positively related to both the personal use of the brand (brand usage) and the exhibiting of various non-usage-oriented extra-role behaviors (extra-role brand support)

However, we found no support for H_6, which predicted a positive relationship between extra-role brand support and brand performance

Although in general the results support the hypothesized conceptual model, we ran two more saturated models, incorporating both direct and intervening effects, with corresponding log-likelihood difference tests examined, to assess whether the mediation present was full or partial A model including the direct effect of brand identification on brand performance resulted in no improvement over the hypothesized model (χ^2 = 1 97, d f = 1, not significant) However, a model including the direct effect of control system alignment on brand performance exhibited a superior fit to the hypothesized model (χ^2 = 6 46, d f = 1, $p <$ 05), while revealing a significant relationship between control systems and brand performance Therefore, we find that brand effort partially, rather than fully, mediates the control systems–brand performance link

The results of these series of models appear in Table 2 Following Snijders and Bosker's (1999) method, we estimated pseudo-R-squares for each of the dependent variables—brand effort (29), brand performance (33), and total performance (20)—suggesting significant variance explained As Becker (2005) suggests, we conducted the analyses with and without the control variables, and the results were virtually identical, with no differences in the significance of relationships among the variables of interest

Cross-Level Effects and Interactions

An important aspect of this study is its multilevel effects and interactions involving the three focal independent variables on the relative effort that a salesperson chooses to expend against a particular brand To interpret the findings more fully, we graphed the interacting relationships by plotting points corresponding to +/– one standard deviation from the means as high and low cases, respectively This enabled us to examine the various high–low combinations of control system alignment and distributor identification as they relate to the corresponding effort put forth behind the brand As Figure 2 depicts, upward-sloping lines represent the consistently positive effect of control systems on salesperson brand effort Moreover, consistent with our previously arguments, there is a cross-over interaction between control system alignment and distributor identification, suggesting that strongly identifying with the distributor results in heightened effort behind the brand when control systems support the brand but work against the brand when control systems do not support the brand In other words, distributor identification serves to strengthen the salesperson's adherence to the control systems put in place by his or her employer, and this can work either for or against the brand

TABLE 2
Model Comparison and Effects

Relationships	Model 1	Model 2	Model 3 (Hypothesized)	Model 4 (Final)
Control system alignment × distributor identification → brand effort	—	—	16*	16*
Brand identification → brand effort	—	18*	16*	16*
Control system alignment × brand identification → brand effort	—	—	n s	n s
Brand identification → extra-role brand support	—	38*	38*	38*
Brand identification → brand usage	—	59*	59*	59*
Brand effort → brand performance	42*	42*	43*	41*
Extra-role brand support → brand performance	n s	n s	n s	n s
Control system alignment × brand performance → overall performance	—	—	12*	12*
Control system alignment → brand performance	26*	—	—	25*
Covariates				
Brand share of market → brand effort	—	06*	06*	06*
Brand share of market → brand performance	74*	82*	83*	72*
Suppliers → brand effort	—	03*	02*	02*
Suppliers → brand performance	n s	n s	n s	n s
Dummy 1 → brand effort	—	87*	78*	80*
Dummy 1 → brand performance	n s	n s	n s	n s
Dummy 2 → brand effort	—	n s	n s	n s
Dummy 2 → brand performance	n s	n s	n s	n s
Dummy 3 → brand effort	—	n s	n s	n s
Dummy 3 → brand performance	n s	n s	n s	n s
d f	107	112	116	117
Log-likelihood	–26,203 35	–26,164 22	–25,014 39	–25,011 04
–2LL change	—	—	2299 66*	6 70*
AIC	52,620 70	52,552 44*	50,440 78	50,438 07
BIC	53,113 61	53,068 39*	50,975 15	50,981 66
N	743	743	743	743

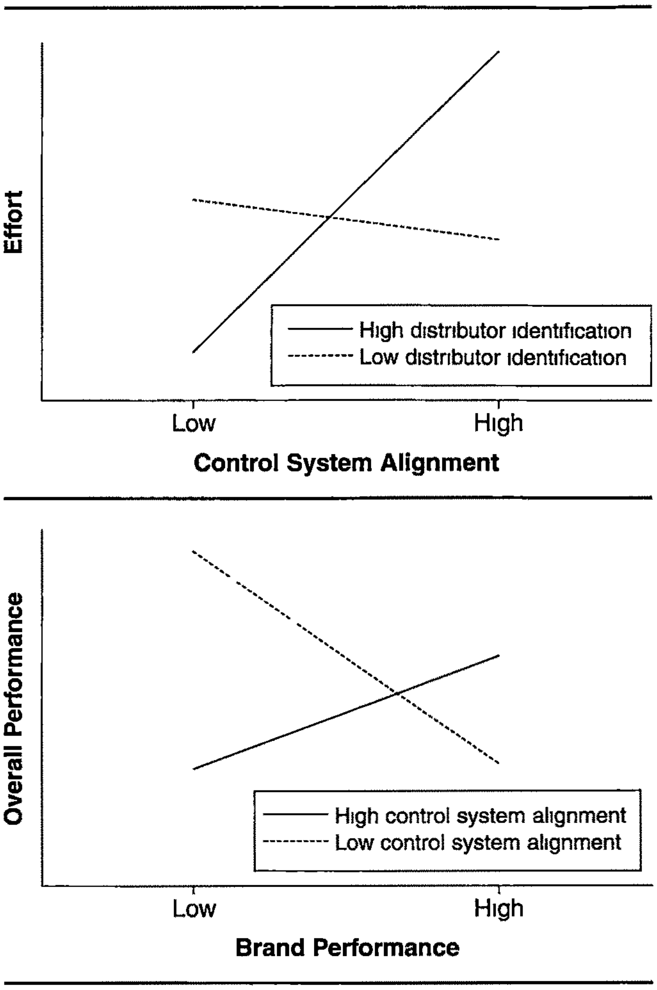
*$p <$ 05
Notes n s = not significant

If control systems are focused on a particular brand, the salesperson who identifies with the distributor falls in line with the dictates of the distributor and expends effort against the brand However, if control systems are directing efforts elsewhere, the salesperson lessens effort directed toward the brand, choosing instead to expend effort elsewhere in accordance with the controls Given the relative slopes of the high and low distributor identification lines, another interpretation is that control systems' positive influence on salesperson brand effort occurs only when the salesperson identifies with the distributor

Though not hypothesized, we conducted a post hoc analysis to determine whether there was a three-way interaction among control system alignment, distributor identification, and brand identification on brand effort We did not find a significant three-way interaction

The lower half of Figure 2 depicts the interaction between brand performance and control system alignment in influencing overall performance for the salesperson, revealing that a salesperson's performance on a particular brand is beneficial to the salesperson's overall sales performance only when that brand is one that the company supports with its control systems In other words, if a salesperson is performing strongly on a brand that is not prioritized by the company, he or she is likely to be less attentive to brands that are more important contributors to the company's overall success Strong brand performance pays off in improved total sales performance only when salesperson and distributor both prioritize the brand

FIGURE 2
Interactions



Discussion

Conclusions and Research Implications

The finding that control systems are effective in driving salesperson behavior is consistent with both economic theory and the literature on sales force controls When normative pressure and financial incentives support the exertion of effort on a particular brand, the self-interest of the salesperson is facilitated by acting in accordance with those controls Recognizing this, upstream suppliers spend considerable resources attempting to directly and/or indirectly influence the control systems that downstream channel members put in place to direct their sales forces, and as evidenced by the results of this study, such an emphasis is well placed However, as the balance of power shifts in the wake of consolidation at all levels of the distribution channel, supplier influence on downstream channel members' sales force controls can become more challenging to attain, particularly in the case of a supplier that is relatively small This is a huge issue to the supplier because the channel member's sales force is also serving as the supplier's sales force as the channel member sells its products further downstream, whether this is to consumers, business end users, or other intermediaries

A key argument we make herein is that there are other psychological forces a company could leverage to positively influence the effort that a reseller's sales force places on its brand relative to the host of other brands that the salesperson is responsible for selling At the same time, resellers should be aware of these potential influences so that their own interests are maximized This study makes several contributions in this regard First, to our knowledge, we are the first to explore the forces of organizational identification within the context of a distribution channel, testing the extent to which a salesperson identifies not only with his or her own company but also with an upstream supplier's brand The results of this study clearly establish not only that salespeople identify to varying degrees with the brands they sell but also that the effort expended against a brand is increased as identification with the brand strengthens Moreover, there are potentially even longer-term, positive benefits to such brand identification, as evidenced by the positive relationship between brand identification and brand-specific extra-role behaviors that may, over time, further contribute to the brand's strength in the marketplace This demonstrated notion of brand extra-role behaviors, and the delineation of two distinct types of such behaviors—brand use and extra-role brand support—is another contribution to theory, marrying the literature on organizational citizenship behaviors with the developing work on brand communities in the context of a sales force, while opening the door for further exploration of its potential longer-term consequences Although we did not find a positive relationship between brand extra-role behaviors and brand performance, this may be a function of these supportive behaviors being more important to the brand in the long run rather than them having an immediate impact on short-term sales For example, though favorable to the brand in the long run, it is less likely that "talking up" the brand to friends and management and defending it from criticism would have a direct effect on brand sales in the current period This is consistent with organizational citizenship behavior literature, which has found that some organizational citizenship behaviors have a long-term rather than short-term influence on performance (Podsakoff, Ahearne, and MacKenzie 1997)

We also contribute by investigating the simultaneous and sometimes conflicting influence of two forms of identification within an organizational setting—the extent to which a salesperson identifies with his or her company and the extent to which the salesperson identifies with a supplier's brand Whether these forces support or conflict with each other depends on the nature of a third variable, control systems When control systems support the brand, brand identification and distributor identification work in concert to further strengthen brand effort However, when control systems do not support the brand, these two forms of identification are at odds with each other The salesperson is motivated to act in a manner consistent with the interests of the entity to which he or she identifies, but brand identification prompts action in favor of the brand, while distributor identification urges the salesperson to exert effort in a different direction The differing effects of these two variables underscore the independent interests of the supplier and distributor The distributor wants its sales force to act in concert with the control systems it has put in place, and salespeople who identify with the distributorship are more apt to do this However, this may not be in a particular manufacturer's best interest The manufacturer benefits instead when the salesperson identifies with its brand because then the salesperson will increase effort on the brand regardless of the direction he or she receives from distributor management, possibly to the detriment of the distributor's overall interests

Limitations and Further Research

As with any research undertaking, it is important to recognize the limitations imposed by the study design First, this study is cross-sectional in nature, so though we provided theoretical rationale in support of the directional relationships proposed and tested, there is no statistical evidence of causality Further research could add value in this regard by taking an experimental or longitudinal approach A longitudinal study would also enable the testing of possible lags among salesperson attributes, behaviors, and performance outcomes, including the potential cumulative effect of brand extra-role behaviors on brand performance Second, common method bias is a frequent concern in survey research, however, we took great pains to minimize this risk by obtaining measures from four separate sources salesperson (identification), route supervisor (brand effort), sales manager (control system alignment), and company records (brand and overall sales performance) Finally, we conducted this study using several firms in the same industry, and though we believe that the results, supported by a strong theoretical foundation, should generalize to other settings, additional studies could confirm this

Indeed, the results of this study pave the way for many additional avenues of research This study represents an important start, but we have only begun to scratch the surface on the idea and ramifications of conflicting forms of identification within an organizational setting, and this topic could be extended even further to consumer–brand and customer–company relationships An examination of the resilience and salience of competing forms of identification under different conditions, along with an exploration of possible adverse consequences of identity conflict to both salesperson and company, could be fruitful Additional investigation within the current context of a distribution channel, with the introduction of appropriate moderators, could also shed light on related questions, such as whether identification under certain conditions could serve as a complete functional substitute for controls

Given this study's demonstrated positive impact of brand identification on brand effort and performance, an important issue is determining what the antecedents of brand identification across a distribution channel are In other words, what steps can a manufacturer take to facilitate the development of brand identification among reseller salespeople? Several potential tactics come to mind—for example, internal marketing communication initiatives, relationship marketing efforts targeting the channel salesperson, increased direct contact between supplier representatives and channel sales representatives, supplier-hosted orientation programs, and distribution of brand-identified apparel Moreover, suppliers likely engender (or not) brand identification among channel salespeople through the latter's observation of other externally directed activities, such as consumer advertising, public relations coverage, and the selection and behavior of supplier representatives Research exploring such possible antecedents would be valuable From a resource allocation perspective, research is needed to instruct companies as to the relative emphasis that should be placed on building salesperson–brand identification versus more traditional efforts to influence channel member control systems

In addition, although this study focuses on intercompany relationships within a distribution channel, it might be worthwhile to explore the competitive nature of brands within a single company Brand managers within the same company often compete for resources and for the attention of the sales organization An examination of how brand identification influences resource allocation and sales-related decisions might be worthwhile, factoring in other forms of organizational identification Finally, in this study, the supplier and the supplier's brand were the same (i e , they shared the same name, and the brand was the supplier's flagship) It would be useful to investigate, in cases in which there is not as close an overlap, the extent to which the channel salespeople identify with the supplier itself versus identifying with an individual brand, along with accompanying ramifications

Managerial Implications

Beyond the theoretical value of the findings, there are important managerial implications to both upstream and downstream companies. For the supplier, an alternative route to influencing the behavior of downstream channel member's salespeople is revealed and substantiated, a finding particularly welcome given industry consolidation and the increasing array of in-house competitive brands carried by many channel members. In attempting to affect sales performance, suppliers have two primary focal points in their interactions with downstream channel members: channel member management and channel member sales personnel. Regarding the first, suppliers invest considerably in attempting to positively affect the amount of resources that channel member management allocates to its brands and the control systems that it puts in place to direct its sales personnel. Influencing this process is one of the critical roles played by the field organizations responsible for calling on the channel member, and the results support the value in this because sales personnel are apt to act in concert with control systems. However, by demonstrating the power of brand identification in influencing salesperson effort and performance, we offer suppliers—even relatively smaller ones that lack channel power—an alternative avenue (beyond incentives and spiffs) to directly influence reseller sales force behavior. Specifically, the results of this study suggest that suppliers can attain incremental effort behind their brands, and ultimately increased brand sales, by forging a strong bond between brand and salesperson such that the salesperson incorporates the brand's defining attributes into his or her own self-concept.

The question is, How can brand identification be built with reseller sales personnel? Although explicating antecedents to salesperson brand identification is beyond the scope of this article, existing research provides some hints. Identification is believed to be a function of the attractiveness and distinctiveness of an entity's identity as perceived by a person along with its construed external identity (i.e., the person's belief as to how others perceive the entity) (Dutton, Dukerich, and Harquail 1994). This implies that the manufacturer should be as deliberate in how and what it communicates to its downstream sales force as it is to its customer base. The implementation of internal branding programs aimed at managing brand perceptions across its extended (i.e., channel member) sales organization may reap dividends for the supplier seeking to gain an edge over competing brands. In addition, research suggests that heightened visibility of a member's affiliation with an organizational entity can build identification (Dutton, Dukerich, and Harquail 1994). Therefore, it could be to the supplier's advantage to take appropriate steps to ensure that connection between its brand and its reseller's sales force is as externally visible as possible (e.g., perhaps through branded apparel or other communication mechanisms).

For the downstream company, the findings reinforce the value of engendering high levels of organizational identification because salespeople who identify with the company more closely follow the dictates of its control systems (i.e., they more closely follow the direction of management in performing their responsibilities). At the same time, this study suggests that downstream companies would be well served by casting a wary eye at the extent to which their salespeople identify with any particular supplier's brand, particularly those suppliers that are less important to the channel member's business. Such brand identification works in favor of both the supplier and the channel member when control systems are aligned with the brand, but when the channel member wants its sales force focused on other products, brand identification can influence salesperson effort in a direction counter to that dictated by the controls. For the supplier, high organizational identification is also a "good news/bad news" situation. When control systems are aligned with a brand, high distributor identification has a favorable effect on brand effort and, ultimately, on brand performance, but when control systems are not aligned with the brand, high distributor identification further detracts from brand effort and brand performance. The bottom line for both supplier and channel member is that they should strive to build salesperson brand and salesperson channel member identification, respectively, while viewing with caution the extent to which the salesperson identifies with the other entity.

Appendix
New Construct Scale Measures and Loadings

Control System Alignment: Sales Manager (Loadings in Parentheses)

Managers were asked to allocate 100 points among four named brands and "all other brands" in rating the relative emphasis that was placed on each brand for the following items during a particular month:

- Incentive programs (.97)
- Commission payout (.93)
- Monthly performance plan objectives (.92)
- Sales meeting focus (.98)
- Ride with focus (.97)
- Overall (.99)

Salesperson Brand Effort: Route Supervisor (Loadings in Parentheses)

Using a seven-point Likert scale with 1 being "no effort" and 7 being "very strong effort," route supervisors were asked to rate the effort that each of their salespeople expended on four named brands relative to other brands that the distributor carries and other salespeople the supervisor oversees, specific to the following activities and circumstances:

- Selling in promotions (.91)
- Selling/building displays (.91)
- Expanding shelf space (.91)
- Increasing distribution (.90)
- Placing point-of-sale material (.84)
- Overall (.95)

Brand Extra-Role Behaviors: Sales Representative (Loadings in Parentheses)

Using a five-point Likert scale with 1 being "never," 2 being "rarely," 3 being "occasionally," 4 being "frequently," and 5 being "always," sales representatives were asked to rate the extent to which they do the following

1 Brand Use
   - Personally consume the brand at home (93)
   - Personally consume the brand in public settings (95)
   - Serve the brand or make it available at parties/gatherings (80)

2 Extra-Role Brand Support
   - Recommend this brand to friends (75)
   - Defend this brand from criticism (70)
   - Encourage other employees to focus their efforts on this brand (87)
   - Encourage distributor management to support this brand (86)
   - Report to management competitive initiatives that might impact this brand (76)
   - Correct out-of-stock situations, pull up facings, rebuild displays, place POS, etc in retail accounts on personal time for this brand, e g , when shopping or in a retail establishment while off work (66)

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Jennifer J. Argo, Monica Popa, & Malcolm C. Smith

The Sound of Brands

Recent research has demonstrated that linguistic characteristics of brand names can cognitively affect product evaluations. In six experiments, the authors demonstrate that affect arising from sound repetition may also be influential. The results reveal across multiple brand names and product categories that exposure to a brand name that has sound repetition in its phonetic structure and is spoken aloud produces positive affect, which favorably affects consumers' brand evaluations, reactions to cross-selling, and product choice. The effects are moderated by consumers' sensitivity to repetition, consumers' opportunity to experience emotions, and the degree to which the brand name's phonetic sound repetition deviates from linguistic expectations. The authors discuss implications for managers and avenues for further research.

Keywords: brand names, affect, linguistics, sound repetition, phonetic/sound symbolism

There has been a significant increase in the rate of growth of brand names being introduced to the marketplace. For example, in 2005, more than 320,000 applications for trademarks were submitted in the United States, more than double the number introduced ten years earlier (PTO Today 2006). Given that brand names are capable of enhancing awareness and creating favorable impressions for a product (e.g., Aaker and Keller 1990) and that some product failures have been attributed to ineffective brand names (e.g., Ford Edsel; Hartley 1992; Klink 2000), it is not surprising that companies spend millions of dollars in naming and maintaining their brands.

Recently, marketing researchers have begun to explore strategies that companies may use to create effective brand names. Some naming strategies produce brand names that explicitly convey information about the product and/or its attributes (e.g., DieHard auto batteries; Keller, Heckler, and Houston 1998). Other strategies may result in names that are not obviously connected to the product's features. An example would be the use of sound symbolism (also referred to as phonetic symbolism), which focuses on the impact of the linguistic structure of brand names on consumer perceptions (e.g., Prozac communicates efficacy through the letter z; Klink 2000, 2001). While research has demonstrated that linguistic characteristics of brand names can cognitively affect product evaluations (e.g., Lowrey and Shrum 2007; Yorkston and Menon 2004), we propose that affect may also be influential. For example, names such as Coca-Cola, Hubba Bubba, Tutti Frutti, Jelly Belly, Kit Kat, Bits & Bites, Lululemon, and Tostitos might elicit positive feelings, especially when the names are spoken aloud.

In six experiments, we test the proposition that when audibly exposed to a brand name that has a phonetic structure containing sound repetition, consumers will experience positive affect, which in turn will favorably influence consumption decisions. To achieve this, we manipulate the brand name's phonetic structure (i.e., a linguistic device of sound repetition is present or absent) and the method of expressing the brand name (i.e., it is spoken aloud or read silently). Moreover, we consider the moderating role of individual differences in sensitivity to repetition (i.e., the ability to perceive repetitive patterns imparted by sound repetition). Finally, we demonstrate that the effects are attenuated when (1) consumers regulate their emotions and (2) the sound repetition deviates too excessively from linguistic expectations.

This research makes several contributions to the literature. Foremost, we extend research that has focused on linguistics from a cognitively driven perspective by demonstrating that affect also plays an influential role. We find that when the phonetic structure of a brand name contains sound repetition (e.g., rhyme) and is spoken aloud, positive affect arises and, in turn, favorably influences consumption decisions. Using a triangulation approach, we demonstrate the role of affect through mediation (Studies 1 and 2), moderation (i.e., emotion regulation [Study 3] and affect priming [Study 4]), and affect-based dependent variables (i.e., reactions to cross-selling of hedonic products [Study 5a] and affect-related product choices [Study 5b]). The research also identifies boundary conditions for our theorizing. Specifically, we find that the effects do not hold for consumers who are low in sensitivity to repetition (Studies 2 and 3) and when the phonetic structure of the brand name deviates too excessively from linguistic expectations (Studies 5a and 5b). Another contribution of the research is that it integrates literature on figurative language and sound symbolism by exploring the impact of rhyming and sound repetition that exist within a word. Indeed, prior research has only considered the impact of linguistic devices within a series of words. Finally, the use of multiple brand names

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and product categories, as well as both native and nonnative English speakers, in addition to tests of competing theoretical explanations, provides what we believe is a compelling demonstration of the predicted effects In the next section, we review literature pertinent to the conceptual development and delineate the direction of six experiments in the current research

Background

Phonetic Structure of a Brand Name

To understand the impact of the phonetic structure of a brand name on consumers, we draw from research on figurative language An artful deviation of language (i e , when the form of an expression deviates from a person's expectations), figurative language can be divided into two categories of deviations tropes (e g , metaphors, similes) and schemes (e g , alliterations, anaphora, McQuarrie and Mick 1996) The primary difference between these categories is that tropes have a high degree of deviation and involve a deep semantic level of processing, whereas schemes have a lower degree of deviation and involve the rearrangement of surface characteristics of language that results in their influence occurring at the sensory level In other words, tropes "play" with meaning, whereas schemes, which often comprise repetitions of sound (e g , rhymes, McQuarrie and Mick 1996), "play" with expression and lend themselves to the artful presentation of ideas (Leech 1969) Given that figurative language has been shown to favorably influence consumers (e g , McQuarrie and Mick 1996), we propose that the use of linguistic devices, such as sound repetition (i e , schemes) in brand names, has a positive impact on consumers

Because we are interested in understanding the role of sound repetition *within* a brand name, we cannot solely rely on figurative language research, which focuses on *groups* of words and syllables Instead, we must also draw from literature on sound symbolism that studies a word's phonemes (i e , the smallest units of sound in language, such as the sound of the letter "b") Sound symbolism refers to the notion that the sound of a word, separate from its connotation, conveys meaning In the earliest demonstration of this phenomenon, when people were presented with a pair of words that differed only by the middle value (i e , "mil" versus "mal"), more than 80% agreed that "mal" referred to a large object and "mil" to a small object (Sapir 1929) Recently, marketing researchers have found that certain vowels and consonants (e g , Klink 2000) and the congruency between the meanings elicited by phonemes and product category attributes (Lowrey and Shrum 2007, Yorkston and Menon 2004) influence evaluations of brand names Thus, it appears that the building blocks of words (i e , letters) and brand names can have important implications for consumers' evaluations of products In this research, we integrate and extend the research on linguistic devices and sound symbolism by proposing that consumers are positively influenced by brand names that contain linguistic schemes of sound repetition However, we expect that this positive impact is moderated by the method of expressing the brand name

Method of Expression

Brand names can be expressed both visually (e g , labels on product packages) and aurally (e g , pronounced by a spokesperson on television) However, to date, research on brand names and sound symbolism has almost exclusively required respondents to read the names silently rather than aloud or hear them (e g , Brendl et al 2005, Klink 2000, 2001) Because sound is an essential element to being able to appreciate and respond to characteristics such as repetition (Macklin 1988), in this research, we expect that hearing a brand name spoken aloud will play a critical role in influencing consumers' responses In particular, we predict that sound repetition contained in a brand name will be more apparent when a consumer hears versus simply sees the name This is consistent with the notion that schemes of sound repetition offer pleasure to the ears (Thonssen and Baird 1948) because they deviate from linguistic expectations, that is, they violate the belief that the distribution of sounds is unordered beyond the constraints of grammar and semantics

> H_1 Consumers will evaluate a brand most favorably when the phonetic structure of its name contains sound repetition and is spoken aloud (versus present/silent versus absent/aloud versus absent/silent)

Role of Affect

To date, consumer research in sound symbolism has found that words influence consumers through their meanings (Klink 2000, Yorkston and Menon 2004) Although we do not dispute that words are influential at a cognitive level, we propose that they may also influence consumers through affect, especially if the words contain sound repetition and are spoken aloud The notion that linguistic devices might elicit positive affect is consistent with age-old assumptions that speech sounds can "stir" pleasant emotions Scholars such as Aristotle believed that linguistic ornaments (i e , figurative language) elicit enjoyment through their sounds (Fergusson 1961) James (1890) also discussed the role of affect in response to aesthetic stimuli, suggesting that sounds can produce "subtle feelings" and "pure and simple" pleasures More recently, Whissell (2006) suggested that sounds connote not only meanings but also emotions Finally, Zhu and Meyers-Levy (2005) find that when sounds within music produce moderate levels of stimulation through their level of energy, positive hedonic value emerges to influence product perceptions This finding is relevant in the current context because energetic music has repetitive rhythm (Gaston 1968) Just as a piece of energetic music containing sound repetition is stimulating and offers pleasure, we expect that hearing a brand name that contains repetition will elicit positive affect On the basis of previous work in marketing (e g , Shiv and Fedorikhin 1999), we further predict that affect will affect consumers' evaluations and choices of brands

H_2 Positive affect will mediate the interactive impact of phonetic sound repetition and method of expression on consumers' evaluations of brands

Study 1

Method

This study uses a 2 (phonetic sound repetition present versus absent) × 2 (method of expression spoken aloud versus read silently) mixed design, with phonetic sound repetition as a within-subjects factor and method of expression manipulated as a between-subjects variable The dependent variable is the evaluation of a target product (i e , ice cream) We assess the mediating role of positive affect Forty-seven undergraduate students from a large North American university, all of whom were native English speakers, completed the study

Two pairs of ice cream brand names were created, with each pair consisting of a brand name that contained a linguistic scheme of sound repetition and a brand name that did not The brand names within each pair were created by matching length and phonetic structure so that the total number of letters and the beginning of each word were identical and only the last few letters in which the phonetic sound repetition was located were different To ensure that the only differentiating element within each pair was whether sound repetition was present or absent, we matched consonants and vowels according to their phonetic characteristics (e g , a fricative such as an "f" was replaced with another fricative, such as an "s") A pretest confirmed that no differences existed in sound symbolism between brand names within each pair This is also true for the words used in subsequent studies, so we do not discuss it further The pairs of words included in this study were "sepsop/sepfut" and "temasema/temafanu " Thus, each pair consisted of a brand name containing sound repetition (i e , "sepsop" or "temasema") and a brand name that did not (i e , "sepfut" or "temafanu") Each participant was exposed to one of the two pairs of brands

Participants were run individually, on arrival at the site, they were informed that the researchers were interested in their evaluations of two brands of ice cream Participants first received the method of expression instructions Those in the spoken-aloud condition were asked to read the first ice cream name aloud, taste the ice cream, and then eat a saltine and take a sip of water to clean their palate Then, they repeated the process for the second ice cream sample Participants in the read-silently condition received the same instructions, except they were asked to read the names of the ice cream silently to themselves After receiving the instructions, participants were provided with the two ice cream samples to taste The two brands always had names drawn from the same pair (e g , sepsop/sepfut), and the order in which the brand names was provided was counterbalanced Unknown to participants, the ice cream samples were from the same container, thus, the two samples were identical Following the product trial, participants completed a questionnaire

Focal constructs Participants were first asked to complete a series of affect items drawn from previous research (e g , Edell and Burke 1987), indicating how each of the brand names made them feel (1 = "not at all," and 7 = "very") Factor analysis revealed two indexes that accounted for 75 2% of the variance We averaged three items—"happy," "delighted," and "joyous"—to create a positive affect index (α = 92), and we averaged three other items—"annoyed," "frustrated," and "angry"—to create a negative affect index (α = 87) We included the latter index to determine whether the valence of affect arising from sound repetition is important in influencing evaluations Participants then evaluated the brands on seven-point scales (i e , "unfavorable/favorable," "dislike/like," "did not enjoy at all/enjoyed very much," "not at all satisfied/very satisfied with the brand") We averaged responses to these items to create an evaluation index (α = 97) To assess the manipulation of sound repetition, participants indicated the extent to which the words were rhythmic, cadenced, and rhymed (1 = "not at all," and 7 = "very much") We averaged these items together to create a perceived repetition index (α = 91)

Alternative explanation measures Beyond positive affect, there are several alternative explanations for why different brand names may influence brand evaluations First, the words created for the study may elicit different sound symbolisms, and thus the different meanings brought to mind by each word might drive the results To test for this possibility, participants completed a battery of items that asked whether the brand name made them think of something—for example, "cold/warm" or "soft/hard" (Klink 2000) Second, it is possible that the names containing phonetic sound repetition (versus those that did not) were easier to process, thus, participants indicated how "difficult," "hard," and "easy" (reverse scored) it was for them to read/pronounce the brand names (1 = "not at all," and 7 = "very", fluency index, α = 85) Third, brand names with repetition might be perceived as more novel and, thus, more appealing to participants, therefore, participants reported how "novel," "unique," "unusual," "striking," and "noticeable" they perceived the brand names to be (novelty index, α = 83) Finally, confidence with reading/pronouncing the words correctly might differ across brand names, thus, we assessed how "confident," "certain," and "sure" participants felt (confidence index, α = 97)

Participants then completed demographic information (e g , gender, age) and an open-ended suspicion probe Analyses including the demographic information did not reveal any significant effects, and an examination of responses to the suspicion probe indicated that participants were not cognizant of the experimental hypotheses These findings also hold in the subsequent studies, so we do not discuss these variables further

Results and Discussion

Following Pinheiro and Bates (2004), we conducted linear mixed effects (LME) models Such models are used to describe relationships between a response variable and variables that are grouped according to one or more classification factors In our case, the grouped data were determined by participants' evaluation of two brands By associating common random effects with observations that share the same level of a classification factor, mixed-effects models flexibly represent the covariance structure induced by the grouping of the data and are more appropriate than traditional regression analyses, which could produce biased estimates (Krasnikov and Jayachandran 2008, Pinheiro and Bates 2004) Consequently, to model possible heterogeneity in the intercepts of the individual participants, we used a random effect for participant The fixed portion of the LME model included the effects of phonetic sound repetition, the method of expression, and their interaction term on the various dependent variables We report any changes in the model accordingly

Preliminary analyses To test whether the brand presentation order and pair influenced brand evaluations, we ran an LME model that included the design factors and their interaction, plus an order dummy variable, a pair dummy variable, and the interactions between each of the dummy variables and each of the independent variables The results did not produce significant effects for order or pair (*ps* > 10) Given the lack of significant effects for the pair and order dummy variables in this study and in subsequent studies, we do not discuss them further Finally, to assess the manipulation of phonetic sound repetition, we conducted an LME model with perceived repetition as the dependent variable We found only a main effect for phonetic sound repetition ($\beta =$ 375, $t =$ 2 76, $p <$ 01), thus, the manipulation was successful

Evaluations An LME model with the brand evaluation index as the dependent variable produced significant main effects for phonetic sound repetition ($\beta =$ 500, $t =$ 3 03, $p <$ 01) and method of expression ($\beta =$ 452, $t =$ 2 52, $p <$ 05) and, more important, a significant two-way interaction between phonetic sound repetition and method of expression ($\beta =$ 375, $t =$ 2 27, $p <$ 05) [1] Participants evaluated the brand more favorably when its name contained phonetic sound repetition and was spoken aloud (M = 5 21) than in the other three conditions ($M_{\text{absent aloud}} =$ 3 46, $t =$ 3 88, $p <$ 001, $M_{\text{present silent}} =$ 3 55, $t =$ 3 45, $p <$ 01, $M_{\text{absent silent}} =$ 3 30, $t =$ 4 12, $p <$ 001, see Figure 1) No other differences were significant (*ps* > 20)

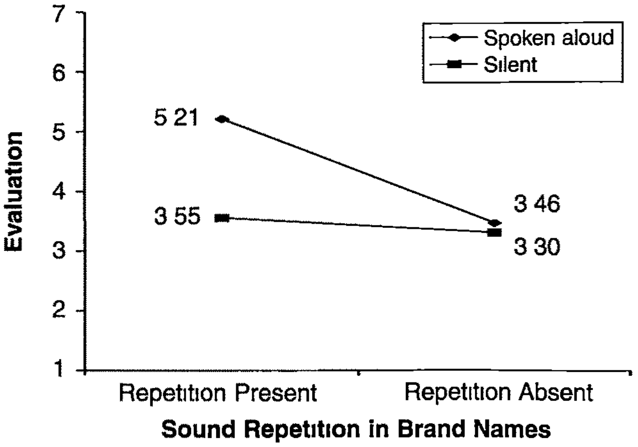
Mediation We conducted mediation analysis to determine whether positive affect was an underlying mechanism As we reported previously, phonetic sound repetition and method of expression significantly interacted to influence evaluations We conducted a second LME model with positive affect as the dependent variable, this also produced the significant two-way interaction ($\beta =$ 302, $t =$ 2 63, $p <$ 05) Finally, adding positive affect as an independent variable into the original analysis with brand evaluation as the dependent variable revealed a significant main effect for positive affect ($\beta =$ 363, $t =$ 3 29, $p <$ 05), and the previously significant two-way interaction became nonsignificant ($\beta =$ 265, $t =$ 1 61, $p >$ 10) Therefore, positive affect mediated the interaction between phonetic sound repetition and method of expression on evaluations We conducted a similar analysis for negative affect, however, the results failed to produce significant effects (*ps* > 20), indicating that negative affect was not a mediator

Alternative explanations We conducted a series of additional analyses, using the same predictors in the LME model described previously, to test more cognitive explanations for the results First, to assess whether the brand names within each pair were similar in terms of sound symbolism, we conducted LME models using the list identified in Klink (2000) as dependent variables The results indicated that brand names containing phonetic sound repetition elicited the same perceptions as those without (*ps* > 10, see Table 1) Thus, the effects are unlikely to be explained by differences in sound symbolism (i e , cognitive associations) Second, to determine whether brand names containing phonetic sound repetition (versus those that do not) are easier to process, are more novel, or differ in the level of confidence they elicited, we conducted three separate LME models, including the processing fluency index, the novelty index, and the confidence index as dependent variables Given that none of the results were significant in any of the three LME models (*ps* > 10), we ruled out the possibility that processing fluency, novelty, or confidence produced the effects

Study 1 finds that a brand was evaluated most favorably when its name contained phonetic sound repetition and was spoken aloud The results also revealed that, consistent with our theorizing, positive affect mediated the interactive effect of phonetic sound repetition and method of expression on brand evaluations Finally, analyses testing several alternative explanations showed that brand names containing phonetic sound repetition (versus those that did not) did not differ in sound symbolism, fluency, novelty, or confidence

Study 2 has several objectives First, we introduce a new variable to capture individual differences in sensitivity to sound repetition (STR) Although prior research has not

FIGURE 1
Brand Evaluation Means



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[1] A mixed-effects analysis of variance and traditional regression analysis also produced the same significant effects

TABLE 1
The Impact of Phonetic Sound Repetition and Method of Expression for the Alternative Explanations (Study 1)

	Phonetic Sound Repetition				Phonetic Sound Repetition × Method of Expression			
	β	SE	t	*p*	β	SE	t	*p*
Sound Symbolism								
A Cold–warm	– 074	139	– 533	596	009	139	065	948
B Soft–hard	– 139	130	1 069	291	– 035	130	268	790
C Weak–strong	– 086	129	664	510	– 023	129	.179	859
D Thin-thick	– 010	143	– 070	945	032	143	222	826
E Light–dark	– 214	143	1 499	141	– 068	143	479	635
F Light–heavy	– 031	165	190	851	031	165	190	851
G Small–big	– 191	138	1 383	174	038	138	279	781
H More–less	– 074	140	530	599	009	140	065	949
I Fast–slow	– 139	115	1 213	232	– 035	115	304	762
Fluency	028	118	238	813	– 006	118	055	957
Novelty	– 019	094	208	836	085	094	905	370
Confidence	– 050	099	502	618	144	099	1 447	155

offered instruments for assessing people's sensitivity to phonetic repetition directly, an indirect approach can be used by measuring STR of musical sounds There is support for the use of such a proxy in Bernstein (1976) and Sloboda (1985), who suggest that a musical note is comparable to a phoneme, the smallest sound unit constituting language As such, we expect that the interactive effect of sound repetition and method of expression found in Study 1 will replicate for people who are high in STR but that differences in evaluations will be attenuated for those who are low in STR

Second, we include an additional product category We did this for two reasons First, because the focal product (i e , ice cream) in Study 1 was a "fun" (i e , hedonic) product and because fun brand names tend to contain phonetic sound repetition, the positive match along the fun dimension may have led to the observed effects rather than solely the sound repetition arising from exposure to the brand name To address this, we introduce a new product category that is utilitarian and more neutral in valence (i e , cat litter) Second, the inclusion of a new product category enables us to further explore the mediating role of positive affect In particular, if an affective mechanism underlies the results, the effects should prevail regardless of the product category

Finally, in Study 1, we achieved the method of expression manipulation by instructing participants in the spoken-aloud condition to vocalize the brand name themselves As a result, it is possible that the act of saying the brand name rather than hearing it influenced the findings To test this possibility, in Study 2, we include a purer manipulation of sound, in which someone else says the brand name aloud and then participants evaluate the product If the results of Study 1 are due to participants hearing the brand name, the findings should replicate, if the results arose because participants enjoyed saying the name, a replication should not arise

Individual Differences in STR

It has been suggested that some people have an ear for recognizing sound patterns, whereas others do not In psychometrics research, this individual difference has received various labels (e g , musical aptitude, sensitivity to repetition, Murphy 1999) The notion that people vary in their STR is important in the current context because we expect that this will influence consumers' responsiveness to a brand name that contains phonetic sound repetition and is spoken aloud Although relevant empirical evidence on the impact of STR is scant, literature on the differences between expert and novice poetry readers provides insight for our theorizing This stream of literature has shown that experts (versus novices) are more comfortable with poetic texts (Earthman 1992) and can more easily identify figurative deviations from everyday language (Zwaan 1993) In the current research, we assume that poetic expertise and STR are akin, which seems reasonable because poetry often contains linguistic devices of sound repetition Given this, we expect that a person with high STR should be especially responsive to brand names that contain such devices Taking this together with the preceding discussion, we postulate that consumers who are high in STR should evaluate a brand most favorably when its structure contains phonetic sound repetition and is spoken aloud because they have an "ear" for repetitive patterns, while differences in brand evaluations will be mitigated for those who are low in STR

H_3 Consumers high in STR will evaluate a brand most favorably when phonetic sound repetition is present in its name and when the name is spoken aloud (versus present/silent versus absent/aloud versus absent/silent) Differences in brand evaluations will be attenuated for consumers low in STR

Study 2

Method

This study uses a 2 (phonetic sound repetition present versus absent) × 2 (method of expression spoken aloud versus read silently) × 2 (product category positive versus neutral) × STR mixed design We manipulate phonetic sound repetition and method of expression and treat them as between-subjects factors We measure STR using the rhythm test from the Primary Measures of Music Audiation Test (PMMAT, Gordon 1979) and include it as a between-subjects factor Finally, we include product category as the only within-subjects factor Again, the primary dependent variable is brand evaluations ($\alpha = 96$), and we assess affect as a mediator ($\alpha = 88$) One hundred twenty-five undergraduate students from a large North American university, all of whom were native English speakers, completed the study

The procedure replicated that described in Study 1, with a few notable differences First, to achieve the phonetic sound repetition manipulation, we randomly assigned participants to a condition in which they were exposed to a brand name that either did or did not contain phonetic sound repetition Second, we used a purer manipulation of the spoken-aloud condition Rather than have participants vocalize the brand name themselves, the experimenter read the name of the brand aloud Third, to enhance the generalizability of the previous findings, we expanded the stimuli by using three new pairs of brand names "bobunob/bogunad," "zanozan/zanovum," and "kenet/kenit" To determine whether the product category influenced the findings, participants tested both a positive (i e , ice cream) and a neutral (i e , cat litter) product Pretesting confirmed that the two products were valenced accordingly In the study, participants were given one of the products, they tested it, and then they completed the key variables Then, they repeated the process for the second product To test the cat litter, participants were instructed to touch the product Both products had either a brand name that contained phonetic sound repetition (drawn from different pairs) or a name that did not The order in which products/brands were presented was counterbalanced

After participants completed the questionnaire, we assessed STR using the computer-based PMMAT test (i e , a test to gauge people's ability to perceive patterns of sounds) Each participant listened to the test instructions, completed a practice session, and then took the actual test The PMMAT consisted of 40 pattern recognition tasks In each task, participants listened to a short sequence of sounds (some of which were combined to generate repetitive patterns) that varied in terms of duration Then, they listened to a second sequence of sounds and were subsequently prompted on the computer screen to indicate whether the two sequences were identical Using their responses, the software generated an overall score, with low/high numbers representing low/high STR

Results and Discussion

Because participants were asked to evaluate two products in this study, we again conducted LME models for all the analyses Including a random effect for participant, we analyzed the impact of phonetic sound repetition, method of expression, product category, the continuous measure for STR, and their interaction terms on the various dependent variables Sound repetition, method of expression, and STR were between-subjects variables, and product category was a within-subjects factor

Evaluations An LME model with the evaluations index as the dependent variable produced significant main effects for phonetic sound repetition ($p < 01$), method of expression ($p < 05$), and product category ($p < 05$) We also found a significant two-way interaction between phonetic sound repetition and method of expression, similar to that observed in Study 1 ($\beta = 341$, $t = 3\ 02$, $p < 01$), as well as a two-way interaction between phonetic sound repetition and STR ($p = 05$) Finally, these results were qualified by a significant three-way interaction among phonetic sound repetition, method of expression, and STR ($\beta = 021$, $t = 2\ 14$, $p < 05$) No other effects were significant

To facilitate an examination of the three-way interaction, we set the mean-centered continuous variable (i e , STR) at high versus low levels, defined as one standard deviation above or below the mean score, respectively (e g , Aiken and West 1991, Verbeke et al 2008) In the case of high STR, the results revealed a significant two-way interaction between phonetic sound repetition and method of expression on brand evaluations ($\beta = 587$, $t = 3\ 64$, $p < 001$) Simple slope analyses revealed that consumers high in STR evaluated the product more favorably when the brand name contained sound repetition and was spoken aloud than (1) when the brand name contained sound repetition and was read silently ($\beta = 1\ 904$, $t = 4\ 11$, $p < 001$), (2) when the brand name did not contain sound repetition and was spoken aloud ($\beta = 2\ 376$, $t = 4\ 76$, $p < 001$), and (3) when the brand name did not contain sound repetition and was read silently ($\beta = 2\ 403$, $t = 3\ 73$, $p < 001$) In the case of consumers low in STR, the two-way interaction between phonetic sound repetition and method of expression was not significant ($p > 50$), brand evaluations were undifferentiated for those low in STR, regardless of the brand name's phonetic structure or the way the name was expressed

Regarding the role of product category, an examination of the means indicated that, overall, ice cream was evaluated more favorably than cat litter ($M_{\text{ice cream}} = 4\ 04$, $M_{\text{cat litter}} = 3\ 57$) However, the lack of significant interactions between product category and the other independent variables suggests that the pattern of results held across both categories When we examine the ice cream data separately, as in Study 1, the product was evaluated more favorably when the brand name contained phonetic sound repetition and was spoken aloud ($M = 5\ 02$) than in the other conditions ($M_{\text{absent aloud}} = 3\ 78$, $p < 05$, $M_{\text{present silent}} = 3\ 78$, $p < 01$, $M_{\text{absent silent}} = 3\ 74$, $p < 01$) A similar pattern arose for cat litter ($M_{\text{present aloud}} = 4\ 30$ versus $M_{\text{absent aloud}} = 2\ 95$, $p < 01$, $M_{\text{present silent}} = 3\ 54$, $p < 05$, $M_{\text{absent silent}} = 3\ 49$, $p < 05$) No other comparisons were significant ($ps > 10$)

Mediation Again, positive affect was a mediator of the effects As we indicated previously, sound repetition, method of expression, and STR interacted to influence evaluations We ran a second model that included positive affect as the dependent variable, this also produced a significant interaction among the three factors ($\beta = 026$, $t = 3\ 08$, $p < 01$) Finally, when we included positive affect as a predictor into the original model for overall evaluations, the results indicated a main effect for positive affect ($\beta = 229$,

$t = 3.06$, $p < .01$), and the previously significant three-way interaction became nonsignificant ($\beta = .015$, $t = 1.52$, $p > .10$). Therefore, positive affect mediated the three-way interaction.

Study 2's results replicated the pattern we identified previously. Products were evaluated most favorably when the brand name contained phonetic sound repetition and was spoken aloud. Consistent with H_3, this finding held only for people who were high in STR; differences in product evaluations were attenuated for those who were low in STR. Finally, the results again revealed that positive affect mediated our effects.

The results of Study 2 are noteworthy for several reasons. First, the finding that the effects held not only for a positive but also for a neutral product is important because it shows that the effects are not confounded, it lends support to the notion that positive affect is driving the effects, and it adds to the generalizability of the findings. Second, replicating the previous findings with the use of a purer spoken-aloud condition demonstrates that it is the act of hearing rather than saying the brand name that is important. Finally, the effects held despite the introduction of new brand names, further generalizing the findings.

In the first two studies, we demonstrated the role of affect through the use of a mediation approach. To provide further support that positive affect is the underlying mechanism for the effects, in Studies 3 and 4, we test for it using a moderation approach. In Study 3, we suggest that unless a person experiences positive emotions in the first place, he or she will not evaluate exposure to sound repetition favorably. Thus, when we hold method of expression constant (i.e., spoken aloud), an interaction effect of phonetic sound repetition and sensitivity to repetition should occur only among participants who allow their emotions to flow naturally. In contrast, if affect indeed drives the effects, when consumers suppress their emotions, we should not observe differences in evaluations, regardless of the presence of sound repetition. To test this possibility, following previous research (e.g., Gross 1998), we instructed participants in Study 3 (1) to allow their emotions to flow naturally or (2) to suppress them before exposure to the product testing experience.

Study 3

Method

This study uses a 2 (phonetic sound repetition: present versus absent) × 2 (emotion regulation: natural versus suppression) × STR between-subjects design. We hold method of expression constant, with the brand name always being spoken aloud, as described in Study 2. The focal product category was ice cream. Again, the primary dependent variable for this study is brand evaluations ($\alpha = .96$). Two-hundred thirteen undergraduate students from a North American university, all of whom were native English speakers, completed the study.

The procedure and the brand names are the same as in Study 2, with two exceptions. First, we included an emotion regulation manipulation before participants' exposure to the product-testing experience. Following previous research (Gross 1998), in the act-natural condition, the experimenter indicated the following to participants: "During the product-testing experience, we would like you to please be as natural as possible, both on the inside and out. If you have any feelings or reactions to the product testing experience, let them flow naturally." In contrast, in the emotion-suppression condition, the experimenter said: "During the product-testing experience, we would like you to please remain completely neutral on the inside and out. Please try your best not to let any feelings or responses you may have to the product testing experience show on your face, and to the best of your ability, try to keep all your internal reactions suppressed." Second, unlike Studies 1 and 2, which used mixed designs, Study 3 uses a between-subjects design.

Results and Discussion

We conducted linear regression analysis that included phonetic sound repetition, emotion regulation, the continuous measure of STR, and their interaction terms as the independent variables and brand evaluations as the dependent variable. The results produced significant main effects for phonetic sound repetition ($p < .001$) and emotion regulation ($p < .001$) and a marginally significant main effect for STR ($p < .06$). We also found a significant two-way interaction between phonetic sound repetition and emotion regulation ($p < .01$), while the two-way interactions between sensitivity to repetition and emotion regulation and between phonetic sound repetition and STR were marginally significant ($p < .10$ and $p < .07$, respectively). Importantly, these results were qualified by a significant interaction among sound repetition, STR, and emotion regulation ($\beta = .207$, $t = 2.12$, $p < .05$). No other effects were significant.

To examine the three-way interaction, we focused on high and low STR. In the case of high STR, we found a significant two-way interaction between phonetic sound repetition and emotion regulation ($t = 3.57$, $p < .001$). Simple slope analyses revealed that consumers high in STR in the act-natural condition evaluated the brand more favorably when phonetic sound repetition was present than when it was absent in the brand name ($t = 5.27$, $p < .001$). However, brand evaluations of consumers high in STR were undifferentiated regardless of the presence or absence of sound repetition in the brand name in the emotion-suppression condition ($p > .80$). The two-way interaction between phonetic sound repetition and emotion regulation was not significant for those low in STR ($p > .60$).

This study demonstrates that when participants allowed their emotions to flow naturally, the results replicated those we found previously. Specifically, participants high in STR evaluated a brand more favorably when it was spoken aloud and contained phonetic sound repetition than when the repetition was absent; participants low in STR did not differ in their evaluations of a brand, regardless of the composition of the brand name. Analyses of participants who suppressed their emotions did not produce any significant findings. These results lend support to the role of affect.

We further test the role of affect using another moderation approach in Study 4. Specifically, we propose that if positive affect underlies the results, participants should evaluate a brand equally favorably when they are in a positive affective state and the brand name does not contain phonetic sound repetition and when they are not in such a state but are exposed to a brand name that does contain repetition. Furthermore, participants should evaluate a brand more favorably when the brand name does not contain sound repetition and when they are in a positive affective state than when they are in a neutral state. To explore this, following Epstude and Mussweiler (2009), in Study 4, we exposed participants to either (1) a positive affect prime or (2) a neutral prime, before testing the products.

Study 4

Method

Study 4 uses a 2 (phonetic sound repetition: present versus absent) × 2 (affect prime: positive versus neutral) mixed design, in which phonetic sound repetition is a within-subjects factor. We manipulate affect prime and treat it as a between-subjects factor. We hold method of expression constant, with the experimenter always saying the brand name aloud. The dependent variable is again brand evaluations ($\alpha = .95$). Thirty-eight native and nonnative English speakers from a large North American university completed the study.

On arrival, participants were informed that they would be completing a variety of unrelated studies. In the first study, they were told that they would be asked to examine a series of pictures and evaluate each picture according to its brightness and sharpness. Participants then viewed seven pictures and evaluated them accordingly. The pictures, which were taken from the International Affective Picture System (Lang, Bradley, and Cuthbert 2005), were used to achieve the affect prime manipulation. In particular, in the positive-prime condition, the pictures were positively valenced, and in the neutral-prime condition, the seven pictures were neutral in affective quality (for a detailed list of pictures and a similar procedure, see Epstude and Mussweiler 2009). After completing the task, participants began what was ostensibly a second unrelated study that involved testing hand sanitizers. In the phonetic-sound-repetition-present condition, the hand sanitizer was called "koopa-roop," and in the absent condition, the brand was called "kooparut." The order in which the brands were tested was counterbalanced. Unknown to participants, the hand sanitizer samples were from the same container; thus, the two samples were identical. Finally, participants indicated the language most commonly spoken at home.

Results and Discussion

Again, we ran LME models because participants were asked to evaluate two brands of hand sanitizer. Including a random effect for participant, we analyzed the impact of phonetic sound repetition, affect priming, and their interaction term on evaluations. Phonetic sound repetition was a within-subjects factor, and affect priming was a between-subjects variable.

Preliminary analyses. To ensure that no differences existed in the results between native and nonnative English speakers, we ran an LME model that included a language dummy variable and its interaction terms with the independent variables. The results did not produce significant main or interaction effects for language ($ps > .30$). Given that these results held true in the remaining studies, we collapsed across language and do not discuss it further.

Evaluations. An LME with the evaluations index as the dependent variable produced a significant main effect for phonetic sound repetition ($p < .01$), a marginally significant main effect for affect prime ($p < .07$), and a significant interaction between the two factors ($\beta = -.317$, $t = 2.09$, $p < .05$). Consistent with our theorizing, when positive affect was primed, participants evaluated a brand whose name did not contain sound repetition as favorably ($M = 4.50$) as a brand whose name contained the repetition, regardless of whether positive affect was primed ($M = 4.69$, $p > .50$) or not ($M = 4.75$, $p > .50$). Furthermore, the brand was evaluated least favorably when sound repetition was absent and the prime was neutral ($M = 3.29$) than in the other three conditions (present/positive, $p < .01$; present/neutral, $p < .01$; absent/positive, $p < .01$).

Study 4 further tested the role of affect using a moderation approach. Consistent with our expectations, participants evaluated a brand more favorably when affect was primed and the brand name did not contain sound repetition than when positive affect was not primed and the brand name contained sound repetition. Differences in brand evaluations were also attenuated, regardless of whether the brand name contained sound repetition when positive affect was primed. Finally, evaluations were significantly higher for a brand whose name did not contain sound repetition following exposure to a positive affect prime than following a neutral prime.

The first objective of the remaining studies is to complete the triangulation approach in demonstrating the underlying role of positive affect. Unlike the previous studies, which explored affect using mediation and moderation, in the last two studies, we argue that if positive affect is indeed elicited in response to verbally stated brand names containing sound repetition, this should be manifested in affect-based dependent variables. Indeed, previous research (e.g., Shiv and Fedorikhin 1999) has shown that positive affect influences a variety of marketing variables (e.g., consumption of hedonic/utilitarian products). Thus, each of the final two studies explores an affect-specific dependent variable. In particular, we predict that hearing a brand name that includes sound repetition will cause participants to be more likely to select (1) hedonic options in response to a cross-selling attempt (Study 5a) and (2) an indulgent product based on their feelings (i.e., chocolate cake) versus a healthful product based on their reason (i.e., fruit salad; Study 5b).

Studies 1–4 consistently found that the presence of phonetic sound repetition in a brand name that is spoken aloud leads to favorable outcomes. Given this, the second objective of Studies 5a and 5b is to identify situations in which brand names containing sound repetition do not have a positive influence on brand evaluations and choices. We propose that one such instance will be when the phonetic sound repetition deviates too excessively from linguistic expectations. As we discussed previously, a focal element of figurative language, and in particular sound repetition, that makes it pleasurable is that it deviates from expectations (McQuarrie and Mick 1996). However, McQuarrie and Mick (1999) further suggest that there is a gradient on which figurative language can deviate and that too much deviation can have diminishing returns and a negative impact on consumers (see also McQuarrie and Mick 1992). Thus, we predict that though a moderate level of deviation from linguistic expectations is positive, high levels of deviation will lead to less favorable responses from consumers. We do not expect any differences to arise between names with high or no deviation (Hargreaves 1984).

Study 5

In the final two studies, we manipulated one factor—degree of deviation from linguistic expectations—across three levels (high versus moderate versus no deviation) as a between-subjects factor. To achieve this manipulation, we varied the relationship between the consonants and the vowels found within the brand name. Consistent with research showing that in language, listeners expect consonant-vowel-consonant-vowel sequences to occur more frequently than consonant-vowel-consonant-consonant sequences (Cutler, Norris, and Williams 1987), in the high-deviation condition, the repetition included a series of adjacent consonants, in the moderate-deviation condition, the repetition had consonants and vowels interspersed, and in the no-deviation condition, the word did not contain phonetic sound repetition (i.e., it did not deviate in linguistic expectations). A pretest ensured that the brand names created for the last two studies differed in deviation as expected. In both studies, the experimenter always spoke the brand names aloud. Seventy-nine native and nonnative English speakers participated in the final two studies.

Study 5a

Participants were verbally informed that a new mobile phone called _____ had been introduced on the market. In the high-deviation condition, the model was called "shonpshon", in the moderate-deviation condition, it was called "shonoshon", and in the no-deviation condition, it was called "shonufam." Participants were then given a study package that described the standard features of the product (see the Appendix) and were asked to evaluate the brand (α = .96). They were then asked to imagine that they had just purchased the mobile phone and that in addition to the standard features, the product had four extra features that they could purchase: downloadable iTunes (IT), new ringtones (RT), internal memory, and extended warranty. The former two items were hedonic, and the latter two items were utilitarian (the order of the items was randomized). Participants indicated the extent to which they would like to buy each of the additional features (1 = "definitely would not buy it," and 7 = "definitely would buy it"). If our conceptualization is valid, the positive affect that arises from a brand name whose degree of deviation is moderate (versus high or no deviation) should result in a greater willingness on the part of participants to select additional hedonic options.

Results and Discussion

Evaluations. A one-way analysis of variance (ANOVA) with brand evaluations as the dependent variable produced a main effect for degree of deviation ($F(2, 76) = 7.27$, $p < .01$), the brand was evaluated significantly more favorably when its name had moderate deviation ($M = 4.28$) than when it had high ($M = 2.95$, $t = 3.46$, $p < .01$) or no ($M = 3.25$, $t = 3.00$, $p < .01$) deviation. No differences arose in evaluations of the mobile phone when the brand name had high or no deviation ($p > .40$).

Extra features. We first conducted a multivariate analysis of variance (MANOVA) with the two hedonic options as the dependent variables. The results revealed a significant main effect for degree of deviation ($F(4, 150) = 5.47$, $p < .001$). Furthermore, univariate ANOVAs for each hedonic option revealed the significant main effect (IT: $F(2, 76) = 4.92$, $p < .01$; RT: $F(2, 76) = 10.66$, $p < .001$). Participants indicated a greater intent to purchase hedonic features when the brand name contained moderate deviation (IT: $M = 4.48$, RT: $M = 4.52$) than when it contained high (IT: $M = 2.85$, $p < .05$; RT: $M = 2.00$, $p < .001$) or no (IT: $M = 3.00$, $p < .01$; RT: $M = 3.00$, $p < .01$) deviation. No differences arose between the high- and no-deviation conditions for the IT option ($p > .80$), though there was a marginally significant difference between the two conditions for the RT feature ($t = 1.79$, $p < .08$).

We then conducted a MANOVA that included the two utilitarian options as the dependent variables; however, we did not find a main effect for degree of deviation ($p > .40$).

The results of Study 5a provide corroborating evidence for the underlying role of affect by demonstrating that a brand name containing sound repetition can influence consumers' reactions to hedonic items. In addition, this study identified a boundary condition under which sound repetition does not lead to favorable outcomes. In particular, the findings arose only when the sound repetition contained a moderate level of linguistic deviation; no differences in responses to a brand arose regardless of whether its name had high or no deviation.

Study 5b

In the final study, the experimenter read the following scenario to participants: "A new restaurant, called ______ opened in your area, and you went there for the first time. You just had a nice meal and you are examining dessert options on the menu." We used the name of the restaurant to manipulate the degree of deviation factor. In the high-deviation condition, the restaurant name was called "Ranthfanth", in the moderate-deviation condition, the restaurant was called "Rantifanti", and in the no-deviation condition, it was called "Rantifumte." Next, participants learned that the restaurant was offering two dessert specials, chocolate cake and fruit salad. Then, they were asked to indicate which of the two desserts they would order and the extent to which they preferred the two options (5 = "strongly prefer chocolate cake," 0 = "neutral," and 5 = "strongly prefer fruit salad") Later, we reordered and recoded the scale (1 = "strongly prefer chocolate cake," and 11 = "strongly prefer fruit salad") In line with the work of Shiv and Fedorikhin (1999), participants then indicated the extent to which their dessert option decision was based on thoughts or feelings on seven-point scales (i e , "thoughts/feelings," "willpower/desire," "prudent self/impulsive self," "rational side/emotional side," and "head/heart", higher values = feelings) We combined these items and averaged them together to create a decision basis index (α = 79)

Results and Discussion

Dessert choice Binary logistic regression with dessert choice as the dependent variable revealed that degree of deviation was a significant predictor (β = 1 03, Wald = 9 99, $p <$ 01), more participants selected the chocolate cake option in the moderate-deviation condition (80%) than in the high-deviation (30%, β = 1 04, Wald = 9 88, $p <$ 01) and no-deviation (33%, β = 2 23, Wald = 12 21, $p <$ 001) conditions The latter two conditions did not differ from each other (β = – 154, Wald = 069, $p >$ 70)

Dessert preference A one-way ANOVA with dessert preference as the dependent variable revealed a significant main effect for degree of deviation (F(2, 76) = 8 90, $p <$ 001) Participants preferred the chocolate cake more in the moderate-deviation condition (M = 3 56) than in the high-deviation (M = 7 17, t(76) = 3 81, $p <$ 001) and no-deviation (M = 7 08, t(76) = 3 52, $p <$ 01) conditions No differences in preferences arose between the high- and no-deviation conditions ($p >$ 90)

Decision basis index A one-way ANOVA that included the decision basis index as the dependent variable produced a main effect for degree of deviation (F(2, 75) = 5 43, $p <$ 01) Participants based their dessert decision more on their feelings in the moderate-deviation condition (M = 5 15) than in the high-deviation (M = 4 13, t(75) = 3 06, $p <$ 01) and no-deviation (M = 4 22, t(75) = 2 66, $p <$ 01) conditions No differences in the decision basis index arose between the high- and no-deviation conditions ($p >$ 80)

Mediation analyses Finally, to determine whether the decision basis index underlies the impact of the degree of deviation on dessert choices and preferences, we conducted mediation analyses We conducted a series of regression analyses, with dessert choice, dessert preference, and the decision basis index as the dependent variables and degree of deviation as the predictor As we mentioned previously, degree of deviation significantly predicted choice (β = 1 03, Wald = 9 99, $p <$ 01) In addition, degree of deviation significantly predicted preferences (β = 1 78, t = 3 46, $p <$ 01) and the decision basis index (β = – 476, t = 2 61, $p <$ 05) Inclusion of the decision basis index in the original analysis for dessert choice and the original analysis for dessert preferences revealed that the index statistically affected both variables (choice β = – 921, Wald = 11 66, $p <$ 01, preference β = –1 06, t = 3 37, $p <$ 01), while the main effect for degree of deviation for both dependent variables statistically fell in significance (choice β = 788, Wald = 4 82, $p <$ 05, Sobel z = 2 15, $p <$ 05, preference β = 1 22, t = 2 39, $p <$ 05, Sobel z = 2 14, $p <$ 05) Thus, consumers' tendency to use their feelings as a decision basis mediates the impact of the restaurant's name on dessert preferences and selections

Study 5b provides additional support for our theorizing that brand names containing moderate levels of sound repetition elicit positive affect, which in turn influences consumers' choices In particular, when a restaurant's name contained a moderate level of linguistic deviation, participants were more likely to select an indulgent dessert (i e , chocolate cake) than a healthful menu item (i e , fruit salad) In contrast, when the restaurant's name contained either a high level of deviation or no linguistic deviation, participants were more inclined to select the healthful option The results of this study in conjunction with those of Study 5a further contribute to the demonstration of the underlying role of affect

General Discussion

Each year, thousands of new products are introduced to the marketplace, and companies spend millions of dollars trying to create a brand name and image that will help in the success of their new product Given the importance of developing successful brand names (i e , brands are one of the most valuable intangible assets firms have, Keller and Lehmann 2006), it is not surprising that researchers in marketing have tried to identify characteristics that will enhance the effectiveness of such names (e g , Keller, Heckler, and Houston 1998, Van den Bergh, Adler, and Oliver 1987)

To date, identifying effective brand names has been traditionally tackled from a primarily cognitively driven perspective For example, research on sound symbolism has found that the phonemes of a brand name can have implications on product evaluations through the meaning consumers elicit when exposed to it (e g , Klink 2000, Lowrey, Shrum, and Dubitsky 2003) However, the possibility that affect is also important for brand naming has not been explored In six experiments, the current research provides the first evidence that positive affect arising from certain types of brand names influences consumers In general, we find across multiple brand names and product categories that brand names containing phonetic sound repetition that are spoken aloud elicit positive affect, which in turn has implications for consumer evaluations and choices

To provide a better understanding of the effect of sound repetition on brand evaluations, this research explores an underlying process mechanism, identifies boundary conditions, and tests competing explanations for the results First, we demonstrate the role of affect in response to brand names using a triangulation approach involving mediation (Studies 1 and 2), moderation (i e , affect regulation [Study 3] and priming [Study 4]), and affect-based outcome measures (i e , reactions to cross-selling of hedonic options [Study 5a] and brand choices [Study 5b]) Second, we demonstrate that an individual difference variable (i e , consumers' STR) and a brand name–related factor (i e , the degree to which the phonetic structure deviates from linguistic expectations) qualify the findings In particular, in Studies 2 and 3, we find that while consumers high in STR are susceptible to the influence of hearing brand names that contain phonetic sound repetition, consumers low in STR are not influenced in the same way. We then demonstrate in Studies 5a and 5b that when a brand name's phonetic structure deviates too much (versus a moderate degree) from linguistic expectations, consumers respond less favorably to the brand. Finally, we test several alternative explanations (i.e., sound symbolism, novelty, fluency, and confidence) and, in doing so, strengthen the conclusions.

Managerial Implications

Brand naming. At a practical level, this research speaks to an increasingly important question that managers are asking: What constitutes a successful brand name? The findings suggest that brand names containing phonetic sound repetition, if spoken aloud, are evaluated more favorably than those that do not contain such repetition or that are merely read silently. It appears that many advertisers and practitioners at least intuitively understand the concept of sound repetition. For example, some highly successful brands in the marketplace, such as Coca-Cola, possess names containing repetitive elements. However, the results also underscore the notion that practitioners need to be cognizant that not all sound repetition is good. Rhetorical figures in general and sound repetition in particular are effective through artful linguistic deviations relative to audience expectations (McQuarrie and Mick 1999). The gradient of rhetorical deviation works such that more deviant figures have a higher degree of effectiveness but only up to a point of diminishing returns. McQuarrie and Mick (1996) show that a rhetorical figure can be so deviant that it negatively affects the audience. In the current research, we show that figures of sound repetition that have a high degree of deviation from linguistic expectations (e.g., overuse consonants "ranthfanth") have a less favorable impact on consumers than sound repetition that contains a moderate degree of deviation (e.g., "rantifanti"). Although we identify one instance in which sound repetition has negative implications for consumers, we encourage further research to identify others.

Advertising and promotion. The results regarding the influence of the mode of expressing names suggest that the medium selected for advertising brands is an important consideration for management. In particular, when brand names contain phonetic sound repetition, they may benefit from the use of radio advertising, television advertising, and public announcements rather than print advertising. Furthermore, given the increased importance of word of mouth in determining the success of brands (e.g., Thompson, Rindfleisch, and Arsel 2006), marketing managers would benefit from encouraging both salespeople and consumers to say aloud brand names that contain phonetic sound repetition.

Product portfolio and cross-selling. This research also shows that the impact of a brand name containing (moderately deviating) phonetic sound repetition goes beyond the focal brand. For example, we find that it influenced consumers' willingness to buy hedonic add-on features (e.g., extra ringtones, downloadable iTunes). As another example, sound repetition in the name of a service establishment, such as a restaurant, influenced consumers' choice between a feeling-based (i.e., chocolate cake) and a reason-based (i.e., fruit salad) menu item. These findings, all stemming from the notion that moderately deviating sound repetition influences consumers' affective state, have important implications for manufacturers in designing their product portfolio and for retailers in training their sales force to cross-sell or up-sell products. For example, salespeople may be more likely to succeed in cross-selling hedonic products after saying aloud brand names with moderate levels of sound repetition because consumers will experience positive feelings.

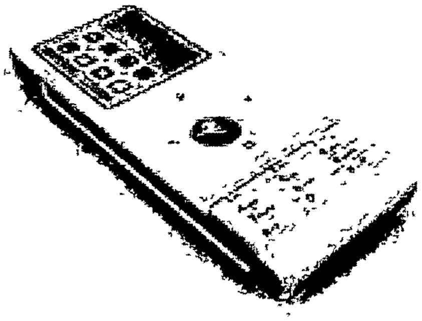
Further Research

Given that this research is only a first step in understanding the role of affect, there are many potential avenues for further research. In this investigation, to explore whether brand names favorably influence consumers' evaluations and choices through affect, we attempted to control for cognition by ensuring that the brands within each pair were equivalent in meaning. Although this approach provides insight from the perspective of affect, it arguably shares the same limitation as previous research that has focused on the cognitive side: It does not take into consideration the possibility that consumers are often influenced by both affect and cognition when evaluating brands. Given this, further research could integrate both perspectives and examine their simultaneous impact on brand evaluations. Relatedly, Keller (2008) identifies six factors that are involved in choosing a brand name: memorability, meaningfulness, likability, transferability, adaptability, and protectability. Although the current research primarily focuses on likability and research in sound symbolism has studied memorabilty and meaningfulness, further research might examine the impact of various aspects of the brand name on other combinations of these factors.

The results add to a growing body of literature that demonstrates the impact of positive affect in consumption (e.g., Chitturi, Raghunathan, and Mahajan 2008; MacInnis and De Mello 2005). However, questions remain unanswered. For example, in light of the carryover effects we found in Studies 5a and 5b, it might be questioned how long the positive affect persists and is influential. Given that previous research exploring the duration of positive affect has produced mixed findings (Homburg, Koschate, and Hoyer 2006; Wood and Moreau 2006), further research could investigate the longevity of effects such as the one we report here.

The findings demonstrate that in the development of brand names, another factor that must be taken into account, other than the use of figurative language, is the method of expressing the name. This is important for at least two reasons. First, we find that a brand name containing phonetic sound repetition creates more positive affect and favorable evaluations when it is spoken aloud than when it is just read silently. Second, by examining the impact of expressing a brand name aloud, this research departs from previous work in sound symbolism, which has typically explored the impact of language in the absence of sound (i.e., silent reading). This previous approach of studying brand names read silently relied on Baddeley and Hitch's (1974) model of working memory, which posits that humans are endowed with a phonological store and an articulatory control process Incoming information can be registered in the phonological store either by an optional process of subvocalization of written material or by an obligatory registration through hearing spoken material (Salamé and Baddeley 1986) Thus, by definition, when words are spoken aloud, they are automatically entered into the phonological store, whereas words that are read silently may or may not enter this store At least two factors could determine whether words read silently enter the phonological store familiarity and involvement For example, subvocalization may be more likely to occur for words that are familiar to a person because without having previously heard the word, it may be difficult to subvocalize it accurately As another example, it is more likely that subvocalization will occur for consumers who are highly motivated to process the information Given that the brand names used in this research were novel and were presented in relatively low-involvement settings, further research might explore the role of the phonological loop in contexts varying in familiarity and involvement

APPENDIX
Description of the Base Model and Additional Features Used in Study 5b



- •GPRS class 10(4 slots) and 32–48 kbps
- •Wireless LAN (WLAN)
- •2 1 Megapixel with flash
- •Bluetooth
- •MP3 player and iTunes compatibility
- •Qwerty Mini Keyboard
- •TFT Color Screen
- •20 0 MB internal memory
- •Standard color light silver
- •6 months warranty

Additional Features

1 Internal memory enhancement The standard internal memory of this mobile phone is 20MB You can increase the size of the internal memory up to 1GB The cost of this feature is $10

2 One thousand iTunes To enjoy the music playing capabilities of your phone even more, you can download one thousand iTunes with your favorite artists/bands The cost of this feature is $10

3 Extended warranty While the standard warranty for this product is six months, you can purchase a three year full warranty, which will allow you to have the phone fixed or replaced no matter what may happen The cost of this feature is $5

4 One hundred new ringtones To be able to include a customized ring tone for each of your friends and family, and always know who's calling you before even getting to your phone, you can download one hundred new ringtones and assign each of them to particular contacts in your phone book The cost of this feature is $5

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To Bundle or Not to Bundle: Determinants of the Profitability of Multi-Item Auctions

This article introduces and empirically tests a conceptual model of the key determinants of the profitability of bundling in auction markets. The model encapsulates hypotheses about how seller revenue from the combined (i.e., bundle) auction of component products relative to that from separate auctions of the components is influenced by the heterogeneity in bidders' product valuations, the degree of complementarity between component products, the particular multi-item selling strategy, and the outside availability of the products. The results of three field experiments show that though bundle auctions tend to be less profitable for noncomplementary and substitute products, they are on average 50% more profitable than separate auctions when there is (even only moderate) complementarity between the component products. The latter effect is greater when the bundle and the separate components are offered at different times, and it is more pronounced for services than for tangible goods. The findings also identify conditions under which each of the essential multi-item selling strategies for fixed-price settings (pure components, pure bundling, and mixed bundling) tends to maximize seller revenue in auctions.

Keywords: auctions, bundling, bidding behavior, online shopping, complementarity

Retailers and wholesalers increasingly use Internet auctions to sell products. For example, more than 724,000 U.S. retailers use eBay as their major channel of distribution, and more than 1.5 million people use it to supplement their income (eBay 2005). This practice of selling items through auction marketplaces, which brings together a large number of buyers and sellers, has created new challenges to retailers (Cheema et al. 2005). For example, a store using a fixed-price format, either on- or offline, may carry thousands of products on its "shelves," but practical considerations limit sellers' ability to offer such a large number of auctions simultaneously. In particular, transaction costs are substantial for both buyers and sellers in online auctions. Buyers incur search and bidding costs as well as shipping and handling costs, whereas sellers pay listing and selling fees, handling costs, and the cost of creating the auctions.

One way for sellers to reduce transaction costs is to use bundling, that is, they can offer multiple component products as a package for a single, combined price. However, although the bundled sale of multiple goods entails economies of aggregation (Bakos and Brynjolfsson 2000), it can also result in the vendor forgoing the additional revenue that might be obtained by selling several component products separately, each to the highest bidder. This raises some important questions about how vendors should go about selling multiple products through auctions and, in particular, what factors determine the optimum selling strategy in this context. Is it better to sell a computer and a monitor in a single bundle auction or in two separate auctions? If they are sold separately, is it better to conduct the component auctions simultaneously or sequentially? Is it best to auction the two items both as a bundle and in separate component auctions? Finally, and critically, what factors determine which of these selling strategies maximizes revenue for the seller? These questions have received limited attention in the literature to date (see Haruvy et al. 2008) because the vast majority of research on auctions in economics has focused on individual auctions (for a review, see Milgrom 2004).

This article examines two key factors that, in addition to the selling strategy, influence the profitability of bundle auctions relative to separate component auctions—the degree of complementarity between the component products (Krishna and Rosenthal 1996; Subramanian and Venkatesh 2009) and heterogeneity in bidders' valuations of these products (Adams and Yellen 1976; Stremersch and Tellis 2002). Complementarity is the additional value consumers derive from owning or consuming two related products, beyond the sum of their individual values (Venkatesh and Kamakura 2003). Following Stremersch and Tellis

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(2002), we decompose heterogeneity into two aspects—asymmetry and variation Asymmetry is the extent to which bidders who have a high valuation for one of the component products tend to have a low valuation for the other, and vice versa, and variation refers to differences across bidders in their valuation of the bundle as a whole

The main contribution of this article is the empirical test of a conceptual model of the determinants of the revenue from a bundle auction relative to separate component auctions Indeed, this is the first empirical investigation of the profitability of bundling in auctions We present evidence from three controlled field experiments Study 1 focuses on sets of component products that are substitutes or have low levels of complementarity Study 2 examines auctions for sets of products with substantial complementarity and compares different multi-item selling strategies (pure, mixed, and partial mixed bundling) Study 3 generalizes the results to a broad range of product categories (including services) and investigates the effect of outside availability (i e , the extent to which the components can be purchased elsewhere)

Taken together, the results of these studies show that though bundle auctions are less profitable for noncomplementary and substitute products, they are more profitable than separate auctions when there is (even only moderate) complementarity between the component products The revenue-enhancing effect of bundle auctions of complementary components is stronger for services than for tangible goods, suggesting that the time-critical nature of services highlights the risk of winning only one of the two items, resulting in less aggressive bidding in the separate component auctions This is the case even when the outside availability of the component products is high Moreover, the results help identify the specific conditions under which each of the essential multi-item selling strategies originally developed for fixed-price markets (pure components, pure bundling, and mixed bundling) maximizes seller revenue in auctions These findings have important implications for vendors' choice among the various multi-item selling strategies in auction markets, and they provide some new (albeit indirect) insights into the effectiveness of different bundling strategies in fixed-price settings

We organize the remainder of the article as follows We begin with a brief overview of the relevant prior literature and then develop our conceptual model by introducing each of its constituent hypotheses After that, we present evidence from three studies that were designed to test this set of hypotheses We conclude with a discussion of the implications of the findings for marketing theory and practice

Bundling and Bundle Auctions

Bundling, a strategy of selling two or more separate products as a package for a single price, is widely practiced in today's marketplace Some examples are vacation packages that include flights and accommodations, product sets consisting of cameras and accessories, and sets of tickets for sporting or other events Most prior research on bundling has characterized this selling strategy as one used by a fixed-price seller to engage in price discrimination, allowing the extraction of additional surplus from buyers with heterogeneous preferences (Adams and Yellen 1976, Schmalensee 1984) That work has considered the case of flexible product supply, with multiple units of a given product being available In such a setting, the seller's revenue depends not only on the prices of the components and/or bundles but also on how many units of these products are sold The advantage of "unbundled" sales is the vendor's ability to obtain the highest price for each component product from individual buyers, whereas bundling can increase seller profit by extracting more consumer surplus by reducing the heterogeneity in buyers' reservation prices, thus serving as a second-degree price discrimination mechanism (see Adams and Yellen 1976, Schmalensee 1984)

Bundling strategies in fixed-price settings have been widely studied in both marketing and economics (for a review, see Stremersch and Tellis 2002) Most prior research on the profitability of bundling has been based either on theoretical models or on simulation analyses An important exception is a field study by Kannan, Pope, and Jain (2009), which examines the bundling of different product forms (i e , books in print and electronic formats), in which bundle discounts led to increased seller profit

A seller that auctions multiple component items separately can do so either simultaneously or sequentially According to prior research, differences in revenue between these two selling strategies are influenced by informational effects and by the degree of complementarity between the items (Hausch 1986, Milgrom and Weber 2000, Rosenthal and Wang 1996) Theoretical work by Milgrom and Weber (2000) shows that in the absence of complementarity between the offered products, revenues from sequential auctions exceed those from simultaneous auctions because bidders may gain new information from early auctions and then bid more aggressively in subsequent auctions [1] However, when there is complementarity between the items, simultaneous auctions tend to produce higher revenues (Krishna and Rosenthal 1996, Rosenthal and Wang 1996) Finally, analytical work by Feng and Chatterjee (2008) shows that the relative profitability of simultaneous versus sequential auctions (for identical items) depends on the ratio of the number of bidders to the number of items

A substantial body of literature exists on combinatorial auctions, in which prospective buyers can submit bids for sets—or "packages"—of items (Cramton, Shoham, and Steinberg 2006, Rothkopf, Pekec, and Harstad 1998) An example of a combinatorial auction is one for airport take-off and landing slots, in which an airline's demand for the two types of slots is interdependent (Rassenti, Smith, and Bulfin 1982) By allowing bidders to place package bids for sets of items, the seller can eliminate bidders' risk of winning some, but not all, of a desired set of complementary items—that is, their "exposure risk" (Bykowsky, Cull, and Ledyard 2000, Chakraborty 2004, Rothkopf, Pekec, and Harstad 1998) The design and implementation of combinatorial auctions, which are predominately used in business-to-business markets, involves a host of complex challenges (both economic and computational in nature) that are beyond the scope of this article (for a comprehensive review of combinatorial auctions, see Cramton, Shoham, and Steinberg 2006, Rothkopf, Pekec, and Harstad 1998)

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[1] Hausch (1986) also proposes a deception effect that opposes the information effect (i e , bidders who are aware of the information effect tend to bid lower in the first auctions) Therefore, the optimality of sequential auctions depends on the net effect of these two opposing influences

Only a small number of articles have examined the profitability of bundle auctions relative to separate component auctions, and all these have used an analytical approach rather than an empirical one (Chakraborty 1999, Krishna and Rosenthal 1996, Palfrey 1983, Subramanian and Venkatesh 2009) Table 1 compares these articles in terms of several important factors reflected in the conceptual model The table also highlights the contribution of the current article relative to the most relevant prior work Critically, this is the first empirical investigation of bundling in auctions In addition to its unique empirical contribution, the current article introduces three novel theoretical constructs that have not been examined in prior work on bundling in auctions (1) We disentangle two components of heterogeneity (variation and asymmetry), (2) we investigate the role of the extent to which the components can be purchased elsewhere (outside availability), and (3) we examine the impact of whether the bundle is offered in isolation or along with the separate component auctions The latter enables us to assess the profitability of different bundling strategies, thus linking the work to the literature on bundling in fixed-price settings

Hypotheses and Conceptual Model

We consider a firm that intends to sell two items either (1) in a single bundle auction or (2) in two separate component actions We focus on second-price auctions with incremental bidding—the predominant auction format in current practice, particularly in consumer-targeted Internet auctions (Lucking-Reiley 2000), though our conceptual model generalizes to other auction formats In such a second-price auction, the participant who submits the highest bid emerges as the buyer, and the amount he or she pays is the second-highest bid plus the bid increment (Vickrey 1961)

Our aim is to examine what factors influence seller revenue from bundle auctions relative to separate component auctions Thus, the dependent variable of interest is the ratio of the revenue from the bundle auction to the sum of the revenues from the corresponding separate component auctions [2] In what follows, we develop six hypotheses pertaining to the key drivers of the relative profitability of these two selling formats The first three hypotheses reflect theoretical predictions that are tested empirically for the first time in the studies presented here, the other three are original hypotheses

TABLE 1
Studies Comparing Auction Formats for Multiple Products

	Palfrey (1983)	Krishna and Rosenthal (1996)	Chakraborty (1999)	Subramanian and Venkatesh (2009)	Current Article
Auction formats	Bundled versus separate	Combinatorial, sequential, and simultaneous	Bundled versus separate	Bundled, sequential, and combinatorial	Bundled, sequential, and simultaneous
Complementarity and substitutability of components	Neither	Complementarity only	Neither	Complementarity and substitutability	Complementarity and substitutability
Heterogeneity in bidders' valuations	Independently distributed	Independently distributed or perfectly positively correlated	Independently distributed	Independently distributed	Asymmetry and variation (negatively and positively correlated)
Outside product availability	No	No	No	No	Yes
Bundle offered in isolation (effect of bundle on components)	No	No	No	No	Yes
Empirical/theoretical	Theoretical	Theoretical	Theoretical	Theoretical	Empirical and theoretical
Conclusions about relative profitability of bundle auction versus separate component auctions	Relative profitability of component auctions increases as the number of bidders increases	Competition increases exposure risk resulting in less aggressive bidding for separate auctions for complements	When the number of bidders is greater than a unique critical number, component auctions are more profitable	Separate auctions are more profitable for moderate complements, and pure bundling for strong complements or with too few bidders	Bundle auctions are more profitable even for moderate complements Heterogeneity and selling strategy influence bundle profitability

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[2] An advantage of using this ratio is that it removes any spurious effect due to the inherent differences in product values (Popkowski Leszczyc, Qiu, and He 2009)

Revenue of a Bundle Auction Relative to Separate Component Auctions

Economic theory suggests that consumer valuations of bundles consisting of functionally unrelated products are strictly additive such that a person's valuation of a given bundle is equal to the sum of his or her valuations of the components (Adams and Yellen 1976, Schmalensee 1984) [3] However, given our focus on the relative profitability of bundle auctions, the relevant units of analysis are auctions rather than bidders

Inherent to bundling in auctions is an allocative inefficiency, whereby bundle auctions tend to yield lower revenue than corresponding separate component auctions The rationale behind this is that when there are separate auctions, each component product can be assumed to be sold to the bidder who has the highest valuation for that individual item, whereas this is not the case when there is a single auction for a bundle consisting of multiple component products In line with this, Palfrey's (1983) theoretical analysis suggests that a profit-maximizing seller should conduct separate component auctions unless there are only two bidders, in which case a bundle auction weakly dominates separate auctions (i e , bundle auction revenues are higher in most, but not all, cases) Similarly, Chakraborty (1999) shows that separate component auctions are more profitable than a bundle auction as long as the number of bidders is greater than some (small) critical number However, the allocative inefficiency of bundle auctions may be offset by their greater transactional efficiency and also by the influence of complementarity between component products and the associated exposure risk

Heterogeneity in Bidders' Valuations

Bidders differ in their product valuations All prior work on bundling in auctions has treated heterogeneity in valuations as a unidimensional construct (Chakraborty 1999, Krishna and Rosenthal 1996, Palfrey 1983, Subramanian and Venkatesh 2009) In contrast, in line with Stremersch and Tellis (2002), we decompose this heterogeneity into two aspects—asymmetry and variation Greater asymmetry implies a lower (more negative) correlation between bidders' valuations of the components (Adams and Yellen 1976, Schmalensee 1984), which in turn reduces the profitability of bundle auctions relative to separate component auctions (McAfee, McMillan, and Whinston 1989, Subramaniam and Venkatesh 2009) An example of high asymmetry is the case of two event tickets, one for a hockey game and one for a classical concert, with consumers having a high valuation for either the hockey game or the concert but not for both In this case, the seller is better off auctioning these items separately rather than as a bundle Conversely, greater variation across bidders in their valuation of the bundle (consisting of tickets for both events) implies a higher or more positive correlation between component valuations (Stremersch and Tellis 2002), which increases the relative profitability of bundle auctions [4] Therefore, asymmetry (variation) has a negative (positive) effect on the profitability of bundle auctions relative to separate component auctions

Disentangling these two aspects of heterogeneity is critical because the two influence bundle profitability in different ways (Stremersch and Tellis 2002) Failure to do so may lead to erroneous conclusions about the effects of heterogeneity in bidders' valuations on the relative profitability of bundle auctions

Thus, we hypothesize the following about the influence of the two aspects of heterogeneity in bidders' valuations on revenue from a bundle auction relative to the combined revenue from separate auctions of the same component items

H_1 Asymmetry in bidders' valuations of the bundle components has a negative effect on revenue from a bundle auction relative to separate component auctions

H_2 Variation in bidders' valuations of the bundle has a positive effect on revenue from a bundle auction relative to separate component auctions

Complementarity and Substitutability of Component Products

In line with prior work, we conceptualize complementarity as the additional value to a consumer, beyond the sum of his or her valuations of two products, that results from owning or consuming both products (Guiltinan 1987, Harlam et al 1995, Stremersch and Tellis 2002, Venkatesh and Kamakura 2003) [5] In contrast, substitutability renders the valuation of a bundle lower than the sum of its components' valuations Thus, complementarity and substitutability represent the opposite ends of a single dimension, which we refer to as the degree of complementarity Greater complementarity (i e , either an increase in complementarity or a reduction in substitutability) leads to higher bundle valuations

To illustrate how complementarity influences bidding behavior in separate component auctions, consider the example of a pair of shoes While one of the shoes alone has little or no value to a consumer, the complete pair may be of substantial value A bidder's strategy in a (second-price) bundle auction is straightforward—the consumer should bid up to his or her valuation of the bundle, which is the sum of valuations of the component products plus the complementarity between them or minus an equivalent term reflecting their substitutability (Cramton 1998)

However, bidding in separate simultaneous component auctions for these two products is considerably more complicated Here, a bidder must decide how much of the complementarity (substitutability) he or she should add to (deduct from) the valuations of the individual items when submitting bids for the separate component auctions, and he or she must do so in the face of exposure risk (i.e., the possibility of winning only one of the two auctions). This risk results in less aggressive bidding in the separate auctions for two complementary components than in the corresponding bundle auction, and the size of this gap should be a function of the degree of complementarity between the components (Benoit and Krishna 2001; Krishna and Rosenthal 1996; Levin 1997; Subramanian and Venkatesh 2009). This leads to the following hypothesis:

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[3] Stremersch and Tellis (2002) distinguish between price bundling and product bundling They define price bundling as the bundling of separate products sold at a discount and product bundling as the integration of two or more functionally related goods at a single price

[4] This does not imply that bundle auctions are more profitable than separate component auctions when variation is high Instead, high variation may merely reduce the difference in revenue between the two

[5] For each of the bundles used in the field studies, we measured the amount of complementarity or substitutability between the two component products in a separate survey

> H_3: The degree of complementarity between component products has a positive effect on revenue from a bundle auction relative to separate component auctions.

Different Multi-Item Selling Strategies

Table 2 provides a typology of the different selling strategies for auctioning two component products both as a bundle and separately. These multi-item strategies differ in terms of (1) whether the bundle is offered in isolation, without either of the components being offered at the same time, and (2) whether the components are offered simultaneously or sequentially. Our typology subsumes the three strategies that are commonly considered in the analysis of bundling in fixed-price settings (Adams and Yellen 1976; Stremersch and Tellis 2002): "pure components," when the firm only offers the component products separately (Cell 4, Line 2); "pure bundling," when it only offers them as a bundle (Cells 2 and 4, Line 1); and "mixed bundling," when the bundle and the separate component products are offered at the same time (Cell 3). However, the two-dimensional classification has the advantage that it identifies the essential differences between the various multi-item strategies while explicitly capturing the temporal dimension, which is critical in the context of auctions.

We first consider whether the bundle is offered in isolation as opposed to at least one of the components also being available separately at the same time. In line with the notion that bidding behavior in an auction can be influenced by another, "adjacent" auction (Dholakia and Simonson 2005), when the bundle is not offered in isolation, bidders may use observed bid amounts for the bundle as an indicator of the value of the component products, and vice versa. Moreover, the joint availability of bundles and separate components may make it easier for consumers to evaluate all the items involved (e.g., Hsee 1996). Thus, offering the bundle along with its components should reduce the difference between the revenue from the bundle auction and the combined revenue from the separate component auctions. However, we hypothesize that this depends on the degree of complementarity (substitutability) between the items. Specifically, we propose that for highly complementary products, the presence of the bundle auction highlights the complementarity between the separately offered components, thus increasing bid amounts in the component auctions and, in turn, revenue from these. We predict the following interaction effect between the degree of complementarity and whether the bundle is offered in isolation:

TABLE 2
Selling Strategies for Auctioning Two Component Products as a Bundle and Separately

Components Offered Simultaneously	Bundle Offered in Isolation: No	Bundle Offered in Isolation: Yes
No	1 {A, B}, A B	2 {A, B} A B
Yes	3 {A, B}, A, B	4 {A, B} A, B

Notes: Within each cell, the vertical dimension indicates different (nonoverlapping) periods.

> H_4: The positive effect of complementarity on the revenue of a bundle auction relative to separate component auctions (i.e., H_3) is greater when the bundle is offered in isolation than when it is offered along with the separate component auctions.

Next, we turn to the second dimension of our classification of multi-item selling strategies—namely, whether the two component products are offered simultaneously or sequentially. Milgrom and Weber (2000) show that in the case of sequential auctions for identical goods, consumers bid more aggressively in later auctions because of the additional information they obtain from the outcomes of earlier auctions, which results in higher total revenue from sequential auctions than from simultaneous auctions. However, this effect is weaker for component products that are not identical—and, more generally, for less similar items—because earlier auctions become less informative about subsequent ones as the similarity of the products decreases.

The construct of product similarity is linked to asymmetry in bidders' valuations of the bundle components such that lower asymmetry tends to be associated with greater similarity between the component products. Thus, in light of Milgrom and Weber's (2000) result, we hypothesize that separate component auctions that are conducted sequentially produce greater (combined) revenue than simultaneous component auctions when asymmetry in bidders' valuations of the bundle components is low, but this difference vanishes as asymmetry increases. Therefore, we predict an interaction effect between the degree of asymmetry in component valuations and component simultaneity, which we express formally as the moderating influence of component simultaneity on the effect asymmetry:

> H_5: The negative effect of asymmetry on the revenue of a bundle auction relative to separate component auctions (i.e., H_1) is smaller when the separate components are offered sequentially than when they are offered simultaneously.

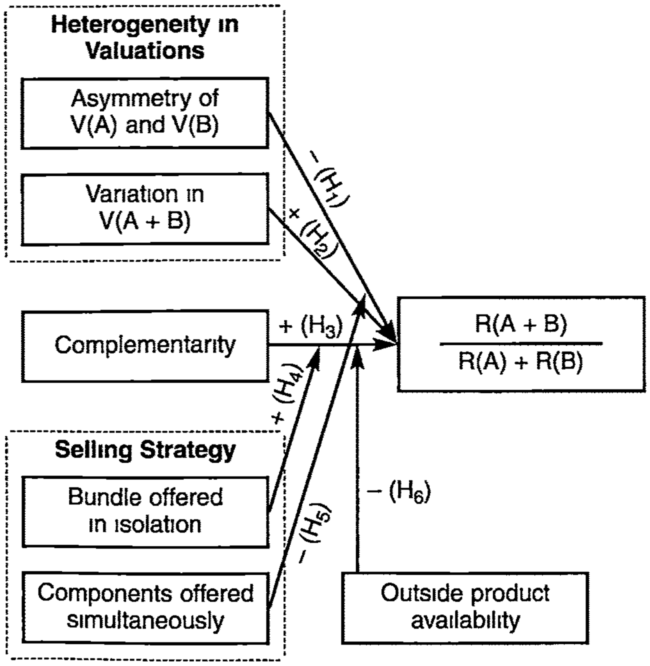
Outside Product Availability and the Effect of Complementarity

Finally, we hypothesize that the effect of complementarity between component products on revenue from bundle auctions relative to component auctions depends on how easy or difficult it is for consumers to buy the individual items from another vendor. To illustrate the predicted moderating influence of outside product availability, we return to the example of a pair of shoes[6] Given that neither shoe is particularly useful without the other, separate auctions for the two shoes tend to result in lower (combined) revenue than a single auction of the pair, because of the risk of winning only one of these two highly complementary items in the case of separate component auctions However, an abundant supply of component products reduces this exposure risk because it enables consumers to easily buy one of the components elsewhere, if necessary Consequently, when component products are widely available from other sellers, the difference between the combined revenue from separate component auctions and the revenue from a bundle auction should be small Thus, we predict the following interaction effect between the degree of complementarity between the component products and the extent of their availability outside the auctions of interest

> H_6 The positive effect of complementarity on the revenue of a bundle auction relative to separate component auctions (i e , H_3) is smaller when outside product availability is high

We summarize these six hypotheses in the conceptual model in Figure 1, which provides an overview of the relationship among selling strategy, heterogeneity in valuations, complementarity, and outside product availability on the revenue of a bundle auction relative to separate component auctions In what follows, we present evidence from three studies designed to test the hypotheses A common aspect of these studies is that a particular pair of component products is always offered twice—once as a bundle and once separately—to allow for a direct assessment of the relative profitability of bundle auctions We systematically manipulated the timing of these different auctions (i e , simultaneous versus sequential)

FIGURE 1
Conceptual Model: Determinants of the Revenue of a Bundle Auction Relative to Separate Component Auctions


Heterogeneity in Valuations
Asymmetry of V(A) and V(B)
Variation in V(A + B)
– (H_1)
+ (H_2)
Complementarity
+ (H_3)
+ (H_4)
Selling Strategy
Bundle offered in isolation
Components offered simultaneously
– (H_5)
– (H_6)
Outside product availability
$\frac{R(A + B)}{R(A) + R(B)}$

Study 1

Pretest of Stimuli (Survey of Stamp Collectors)

To pretest the stimuli—sets of collectable stamps—used in Studies 1 and 2, we conducted an Internet-based survey of 157 stamp collectors, who were recruited through stamp-related online communities and were paid $10 for their participation After successfully completing a set of questions that tested their knowledge regarding collectable stamps, participants were presented with descriptions of sets of stamps, one at a time For each of the sets (which represented either an individual component or a bundle), participants stated their valuation (i e , how much they would be willing to pay for it) in U S dollars We used these valuations as a basis for constructing indicators of complementarity, asymmetry, and variation for each of the bundles We operationalized complementarity (or substitutability) as the ratio of the valuation of the bundle to the sum of the valuations of its components We operationalized asymmetry as the (Pearson) correlation coefficient between participants' valuations of the two components of a bundle, with more negative values indicating greater asymmetry We measured variation as the variance in valuations of a bundle across individuals In addition, participants rated how well they thought the two components in each bundle fit together on an 11-point scale, with endpoints "very poor" (0) and "excellent" (10) Each participant completed this task for one quarter, selected at random, of the combined pool of 208 sets of stamps used in Studies 1 and 2

Experimental Design and Procedure

A total of 168 auctions were run on eBay over a three-week period The products sold were sets of collectable stamps The selling format was either a single bundle auction consisting of two components or two separate auctions for these components Two identical replicates of each of 112 components were sold—once separately and once as part of a two-component bundle Thus, the study involved 112 component auctions and 56 corresponding bundle auctions We ran the two component auctions for a given bundle sequentially For example, the bundle auction may have been in Week 1, followed by the first component auction in Week 2 and by the second one in Week 3 We counterbalanced the order of these across bundles[7] The 56 bundles were constructed such that the degree of complementarity between their components varied from positive to negative

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[6] We thank an anonymous reviewer for suggesting this example

[7] In addition to counterbalancing, we tested whether treatment order had any influence on revenue from bundle auctions relative to combined revenue from separate component auctions in any of the three studies The effect of order was not significant in any of them (Study 1 $p = 67$, Study 2 $p = 33$, Study 3 $p = 95$)

(i.e., substitutability). Examples of component items that are substitutes—in that the survey results indicate that collectors' joint valuation of the bundle is well below the sum of the valuations of the individual components—are two separate sets of 100+ mint United Nations stamps of which collectors typically want one but not both (for details on the design and stimuli, see Table A1 in the Web Appendix at http://www.marketingpower.com/jmjuly10).

All auctions ran for five days. They had predetermined ending times (all on Sunday evening North American time), and no reserve prices were specified. All auctions were conducted through an experienced eBay seller account (with more than 200 feedbacks). For each auction, a picture and a verbal description of the set of stamps were provided.

Results

All 168 auctions resulted in a sale. For each auction, we observed the winning bid (in U.S. dollars), the number of bids submitted, and the number of unique bidders, and we augmented these with the measures of complementarity/substitutability, asymmetry, and variation obtained from the survey. Across the 56 bundles used in this study, the average ratio of bundle valuation to (combined) component valuations is .77, with ratios for individual bundles ranging from .39 to 1.24, suggesting a tendency toward substitutability rather than complementarity for these particular stimuli.

Overall, separate component auctions turned out to be more profitable. The average (combined) revenue from the component auctions was $14.68, while that from the bundle auctions was only $10.99 ($t_{55} = 3.441$, $p = .0011$). This is not surprising, given that the bundles used in this study were skewed toward substitutability, but it is also consistent with what would be expected from the allocative inefficiency of bundle auctions. Furthermore, we estimated a general linear model with the natural logarithm of the ratio of the revenue from the bundle auction to the combined revenue from the component auctions as the dependent variable and asymmetry, variation, and complementarity/substitutability as independent variables ($R^2 = .30$). To facilitate comparisons between the effects of the two aspects of heterogeneity in valuations, we standardized asymmetry and variation. In line with H_1, asymmetry in component valuations has a negative effect on revenue from bundle relative to component auctions ($\beta = -.142$, $p < .05$). Moreover, consistent with H_2, variation in bundle valuations across bidders has a positive effect on this outcome variable ($\beta = .153$, $p < .05$). Asymmetry and variation are only mildly negatively correlated ($r = -.18$), suggesting that multicollinearity is not a concern in these data. Finally, a positive coefficient for the degree of complementarity ($\beta = 1.353$, $p < .01$) reveals that the relative profitability of bundle auctions increases as the complementarity of the component products increases (or as their substitutability decreases), which provides support for H_3.

Discussion

The results of Study 1 reveal that for a set of bundles, most of which consist of components that are substitutes, bundling tends to be less profitable for sellers than separate auctions. On average, revenue from bundle auctions was 25.1% lower than the combined revenue from corresponding separate auctions. For 44 of the 56 bundles, the separate component auctions produced higher revenue than a single auction for the bundle. In 22 of these 44 instances, revenue from one of the component auctions was actually higher than that from the bundle auction.

Moreover, the findings of this study show that asymmetry, variation, and complementarity influence the relative profitability of bundle auctions as predicted. Notably, the opposing effects of asymmetry and variation are of approximately equal magnitude (as indicated by their standardized coefficients). Because these influences roughly offset each other, neglecting to disentangle the two aspects of heterogeneity might lead to the false conclusion that the relative profitability of bundle auctions is not affected by heterogeneity.

Finally, we examined the possibility that complementarity/substitutability has an indirect effect on revenue from bundle auctions relative to separate component auctions through the number of bidders who choose to participate. In particular, a bundle auction for complementary components may attract more bidders than separate auctions. However, the results of a mediation analysis provide no evidence of such an indirect effect (Sobel test, $p > .3$).

Study 1 considered only one of the multi-item selling strategies shown in Table 2 (i.e., Cell 2). In Study 2, we examine the profitability of the remaining strategies and focus on complementary products to investigate bidders' response to exposure risk in greater depth.

Study 2

Experimental Design and Procedure

Study 2 uses the same basic procedure as Study 1. The main difference is that in Study 2, we manipulate the selling strategy in terms of (1) whether the bundle is offered in isolation (i.e., with neither of its components being offered separately at the same time) and (2) whether the two component auctions are held simultaneously (Cells 1, 3, and 4 of Table 2). Two identical replicates of each of 96 components were sold—once separately and once as part of a two-component bundle. Each of the 48 bundles consisted of a complete series of stamps (or a small collection of completed series). Splitting these bundles into two parts resulted in pairs of complementary components. We randomly divided the 48 bundles into three groups of 16 to be assigned to the three treatment conditions (i.e., selling strategies). A total of 144 auctions (48 bundle auctions and 96 component auctions) were run on eBay over a period of two weeks using the same protocol as in Study 1. We counterbalanced the order of bundle and component auctions within selling strategy (for details on the design and stimuli, see Table A2 in the Web Appendix at http://www.marketingpower.com/jmjuly10).

Results

All 144 auctions resulted in a sale. Again, we augmented the auction outcomes with the measures of complementarity, asymmetry, and variation from the survey Across the 48 bundles used in this study, the average ratio of bundle valuation to (combined) component valuations is 1 19, with ratios for individual bundles ranging from 83 to 1 78, suggesting a tendency toward complementarity rather than substitutability for these particular stimuli

Overall, bundle auctions were more profitable for these (mostly) complementary goods The average revenue from the bundle auctions was $24 87, while the combined revenue from the component auctions was only $16 52 on average ($t_{47}$ = 3 19, *p* = 0025) We also estimated a general linear model, similar to that for Study 1, with the log of the ratio of the revenue from the bundle auction to the combined revenue from the component auctions as the dependent variable (R^2 = 46)[8] We summarize the results in Table 3 Consistent with the findings of Study 1, the degree of complementarity between the component products has a strong positive effect on the relative profitability of bundle auctions, providing further support for H_3

With respect to the different selling strategies, the main effects of offering the bundle in isolation and of offering the two components simultaneously are not significant[9] (Note that we did not have any directional predictions for these) Critically, however, the two hypothesized interaction effects involving aspects of the selling strategy are significant First, the interaction between complementarity and bundle in isolation demonstrates that the positive effect of product complementarity on the revenue of a bundle auction relative to separate component auctions is greater when neither of a bundle's components is offered separately along with the bundle, in line with H_4 Second, although the main effects of asymmetry and variation (which are almost perfectly independent, r = – 004) are not significant, the significant interaction between asymmetry and simultaneous components shows that asymmetry has a less negative impact on revenue from bundle auctions than on that from separate auctions when the two component auctions are held in sequence rather than simultaneously This provides support for H_5

The results of this study also enable us to compare the multi-item selling strategies commonly considered in connection with fixed-price bundling We held a bundle auction (1) along with the separate auctions for both of its components ("mixed bundling"), (2) by itself, but with both components being offered separately at a different time ("pure bundling and pure components"); or (3) with one of its components being available simultaneously but the other one being offered at a different time ("partial mixed bundling and sequential components", e g , Choi and Stefanadis 2006)

TABLE 3
Study 2: Determinants of Revenue from Bundle Auctions Versus Separate Component Auctions

Independent Variables	Coefficient (SE)	t-Statistic	Hypothesis (Supported)
Intercept	– 925** (432)	4 72	
Complementarity	1 306** (367)	3 56	H_3 (Yes)
Bundle in isolation	699 (519)	1 35	
Components simultaneous	191 (139)	1 37	
Asymmetry	025 (075)	33	H_1 (No)
Variation	– 055 (061)	– 91	H_2 (No)
Complementarity × bundle in isolation	991* (463)	2 14	H_4 (Yes)
Asymmetry × components simultaneous	– 263* (116)	2 26	H_5 (Yes)

**p* < 05
***p* < 01

In all three cases, revenue from bundle auctions was higher than the combined revenue from separate component auctions—by 11% for mixed bundling, by 69% for pure bundling and pure components, and by 56% for partial mixed bundling and sequential components Although this difference was not statistically significant for mixed bundling (*p* > 25), it was significant in the other two scenarios (*p* < 05) This suggests that for complementary products, bundle auctions can produce substantially higher revenue than separate component auctions, particularly when the set of component products is not offered in separate auctions at the same time (which is consistent with H_4)

Discussion

The results of Study 2 show that for complementary goods, bundling can be substantially more profitable than separate auctions On average, revenue from bundle auctions was 50 5% higher than the combined revenue from corresponding separate auctions For 34 of the 48 bundles used in this study, offering the products in a single bundle auction produced higher revenue than doing so in separate component auctions Note that this was the case even though the number of bidders who participated in a given bundle auction (M = 10 3) was considerably lower than the total number of bidders who participated in the two component auctions (M = 16 8, *p* < 01)

In addition to demonstrating the role of complementarity as a key driver of the relative profitability of bundle auctions (H_3), the findings provide support for two of the hypothesized interaction effects in our conceptual model First, the positive effect of complementarity is greater when the bundle and the separate components are offered at different times (H_4) This suggests that the simultaneous availability of a bundle auction highlights the complementarity between the component products and thus results in more aggressive bidding in the separate auctions Second, asymmetry in component valuations has a less negative impact on the relative profitability of bundle auctions when the separate component auctions are held in sequence than when they are held simultaneously (H_5). This is consistent with the notion that auction participants bid more aggressively in sequential than in simultaneous component auctions for similar products because of the additional information they obtain from the outcomes of earlier auctions.

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[8] To assess the relative profitability of bundle auctions across the different treatment conditions, we examine revenue from a bundle auction relative to that from the corresponding set of component auctions To ensure comparability, we normalized the combined revenue from each pair of component auctions to 1

[9] Both these independent variables were coded as 0 = "no" or 1 = "yes," indicating whether the bundle was offered in isolation (i e , without the individual components being available at the same time) and whether the two separate component auctions were held simultaneously

Studies 1 and 2 were based on auctions of sets of collectable stamps. Thus, the particular items sold were unique and not available elsewhere at the time we conducted the studies. In the interest of generalizability, Study 3 examines the relative profitability of bundle auctions across a broad range of product and service categories, which also enables us to vary the outside availability of the auctioned items.

Study 3

Pretest of Stimuli

We conducted an Internet-based survey of 48 consumers to guide the selection of stimuli for this study. They were paid $30 for their participation. Although the demographics of this sample closely matched those of the population of prospective bidders in the auctions conducted for Study 3, none of the survey respondents participated in any of these auctions. For each of a large number of candidate component items and bundles, we obtained the same set of measures as in the pretest for Studies 1 and 2. In addition, for each bundle, participants indicated how easy or difficult they thought it would be to buy one of the two components separately (i.e., without the other), using an 11-point scale with endpoints "very easy" (0) and "very difficult" (10), which is an indicator of (the lack of) outside availability.

Experimental Design and Procedure

The overall method was similar to that used in the first two studies. One difference is that we conducted Study 3 on a local Internet auction site available only to residents of one major North American city. At the time of the study, the auction site had more than 7400 registered users. As in Studies 1 and 2, ascending-bid auctions with predetermined ending times were used.

This study focused on selling formats in which the two separate component auctions were run simultaneously. The main manipulation was whether the bundle auction was held at the same time as the component auctions or at a different time (Cells 3 and 4 of Table 2). We varied selling format within a given bundle using the following treatments: (1) bundle and components offered at the same time, (2) bundle only, and (3) components only. We administered these treatments at different times and counterbalanced their six possible orders. Four identical replicates of each of 96 components were sold—twice separately and twice as part of a two-component bundle. Thus, the study involved 192 component auctions and 96 corresponding bundle auctions.

Half the bundles consisted of services, and the other half included tangible goods. In addition, the bundles were designed to vary in the degree of complementarity between the components, the degree of asymmetry in component valuations, and market value. For example, a bundle of complementary tickets for a concert (one type of service used in this study) might consist of two preassigned adjacent seats, whereas two general admission tickets for an event would constitute noncomplementary components. Moreover, some of the bundles contained components with high asymmetry in valuations (e.g., a ticket for a classical music concert and one for a hockey game), while others consisted of components with low asymmetry. (We provide examples of the different types of auctions used in this study in the Web Appendix, Figures A1–A3 [http://www.marketingpower.com/jmjuly10].)

The auctions were conducted over a period of three days, with each auction running for 23 hours, starting at 9:00 PM and ending at 8:00 PM the following day. No items similar to any of the ones used for this study were available on the auction site at any point during this period. All auctions were conducted through an established seller account (with more than 300 feedbacks).

Results

All 288 auctions resulted in a sale (for summary statistics, see Table 4). On average, revenue from the bundle auctions ($58.44) was higher than the combined revenue from the corresponding component auctions ($52.40, $t_{95} = 2.38$, $p = .019$). For complementary items, average revenue from the bundle auctions ($65.79) was substantially higher than that from separate component auctions ($43.92, $t_{51} = 6.291$, $p < .001$). The opposite was true for substitute items, for which bundle auctions on average resulted in lower revenue ($50.11) than corresponding component auctions ($62.27, $t_{43} = 6.436$, $p < .001$). This pattern of results is consistent with H_3.[10]

Again, we estimated a general linear model, with the log of the ratio of the revenue from the bundle auction to the combined revenue from the component auctions as the dependent variable ($R^2 = .54$). We summarize the results in Table 5. The positive effect of the degree of complementarity is again highly significant, providing further support for H_3. The main effects of the two aspects of heterogeneity, asymmetry and variation (which are virtually uncorrelated in these data, $r = -.03$), are not significant. In line with H_4, the interaction between component complementarity and a bundle in isolation is significant, indicating that the positive effect of complementarity on the revenue of a bundle auction relative to separate component auctions is greater when the bundle is offered in isolation rather than along with the separate auctions. This corroborates the results of Study 2. Outside product availability has a significant main effect, suggesting that bidding in the separate component auctions was less aggressive when items were more difficult to obtain elsewhere. However, the interaction between complementarity and availability (H_6) is not significant. Finally, we find a positive main effect for services (relative to tangi-

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[10] This classification is based on the mean of the measure of the degree of complementarity obtained in the pretest (i.e., the ratio of the valuation of the bundle to the sum of the valuations of the components), with values exceeding 1 indicating complementary items and values less than 1 indicating substitute items.

TABLE 4
Summary Statistics for Study 3

Category	Number of Bidders/Bids in Bundle Auction	Combined Number of Bidders/Bids in Component Auctions	Revenue from Bundle Auction	Combined Revenue from Component Auctions	Degree of Complementarity[a]	Retail Price	Number of Auctions
Tangible Goods	5 3/10 5	9 8/17 5	$ 57 56	$ 58 27	1 20	$ 78 20	144
Substitutes	5 6/11 5	10 3/18 3	62 32	72 22	96	80 63	78
Computer	5 0/11 5	10 7/16 3	50 11	66 55	90	69 31	18
Electronics	5 7/12 5	11 8/24 0	123 00	127 12	98	147 95	18
Health/beauty	5 6/10 3	10 1/17 1	32 77	34 96	96	33 58	24
Others	6 0/12 3	8 5/16 2	53 25	72 68	90	87 37	18
Complements	5 0/9 2	9 3/16 6	51 94	41 79**	1 47	75 31	66
Electronics	5 6/10 9	8 5/16 2	72 68	53 25**	1 37	92 75	24
Jewelry	5 0/8 9	9 7/14 4	46 32	28 10**	1 73	83 65	30
Others	4 0/6 5	6 8/10 5	11 38	10 56	1 05	19 59	12
Services	5 6/9 8	8 0/14 2	$ 59 64	$ 46 39**	1 18	$ 86 77	144
Substitutes	5 4/9 6	9 3/15 6	40 52	51 88**	98	72 71	54
Dinner	5 6/9 4	8 6/16 0	42 54	48 64	99	60 00	24
Sporting events	4 3/8 3	9 3/15 0	33 88	42 50	1 00	102 98	12
Other tickets	6 0/10 7	10 3/15 5	42 27	62 46**	96	69 49	18
Complements	5 7/10 0	7 2/13 4	71 10	43 10**	1 28	95 20	30
Fine dining	9 0/15 8	11 5/23 5	163 50	117 75*	1 14	150 00	12
Sporting events	5 3/9 1	5 4/11 0	31 76	60 96**	1 29	96 67	36
Other tickets	5 1/9 1	7 6/12 5	53 39	31 49**	1 30	78 29	42
Total	8 9/15 9	5 5/10 1	$ 58 60	$ 52 33**	1 19	$ 82 48	288

*Difference between revenue from bundle auctions and combined revenue from separate component auctions is significant at significant at $p < 1$

**Difference between revenue from bundle auctions and combined revenue from separate component auctions is significant at $p < 05$

[a]Measured in the pretest

TABLE 5
Study 3: Determinants of Revenue from Bundle Auctions Versus Separate Component Auctions

Independent Variables	Coefficient (SE)	t-Statistic	Hypothesis (Supported)
Intercept	338 (218)	1 55	
Complementarity	1 694*** (483)	3 51	H_3 (Yes)
Asymmetry	021 (066)	32	H_1 (No)
Variation	− 012 (079)	− 15	H_2 (No)
Product availability	248** (083)	2 99	
Service	190* (116)	1 65	
Bundle in isolation	087 (110)	79	
Complementarity × bundle in isolation	740** (404)	1 83	H_4 (Yes)
Complementarity × product availability	073 (276)	26	H_6 (No)
Complementarity × service	1 446** (552)	2 62	

*p < 1
**p < 05
***p < 01

ble goods) and an interaction effect between service and complementarity

Discussion

The findings of Study 3 generalize those of Studies 1 and 2 to a broad range of product and service categories They provide further evidence of the strong effect of complementarity In particular, while bundle auctions resulted in higher revenue than separate component auctions for complementary items, the opposite was the case for substitute items Somewhat surprisingly, the effect of complementarity persisted even when the component items were easy to obtain outside the auction market, as indicated by the absence of an interaction effect between complementarity and product availability (H_6) However, the significant main effect of outside availability reveals more aggressive bidding for unique items in separate component auctions

Revenue from bundle auctions relative to corresponding component auctions was significantly higher for services than for tangible goods This was the case even though the average degree of complementarity (i e , the ratio of the valuation of the bundle to the sum of the valuations of its components as measured in the pretest) was higher for the tangible goods (1 44) than for the services (1 17, $t_{58} = 4$ 14, $p <$ 001) used in this study Moreover, the significant interaction effect between service and the degree of complementarity shows that the latter has a stronger impact on the relative profitability of bundle auctions for services This suggests that the time-critical nature of services (e g , tickets for a concert or sporting event) heightens the risk of winning only one of the two items (i e , the exposure risk) and thus leads to less aggressive bidding in separate component auctions

Because we manipulated selling strategy within bundle in Study 3, it is also possible to compare the absolute revenues obtained with the different strategies First, on average, across all goods and services, revenue from bundle auctions was higher under a pure bundling strategy ($63 01) than under mixed bundling ($54 19, $t_{182} = 2$ 65, $p =$ 01) However, we observed this effect only for complementary products but not for substitutes Second, the combined revenue from separate component auctions did not differ between a pure components strategy ($53 87) and a mixed bundling strategy ($50 79, $t_{182} =$ 92, $p =$ 36) Thus, while mixed bundling reduced the difference in revenue between a bundle auction and separate component auctions, it also resulted in lower overall revenue than running the bundle auction and the set of component auctions at different times Moreover, a pure bundling strategy is revenue maximizing for complementary items, while a separate component strategy tends to yield the highest revenue for substitute items

General Discussion

The increasing prevalence of auctions as a selling format demands a better understanding of the comparative profitability of different strategies for auctioning sets of goods or services Although bundling strategies are commonly used in both fixed- and variable-price settings, little empirical evidence exists regarding their profitability This article introduces and empirically tests a conceptual model of the determinants of the revenue of a bundle auction relative to separate component auctions (see Figure 1) The conceptual model consists of three key components (1) heterogeneity in bidders' valuations, (2) complementarity between component products, and (3) different multi-item selling strategies Table 6 provides an overview of the key results of the three studies that were designed to test this model empirically

First, heterogeneity in bidders' valuations is an important factor in theoretical models of bundling We decompose this heterogeneity into two aspects—asymmetry and variation The empirical evidence regarding the impact of heterogeneity on the relative profitability of bundling in auctions is nuanced In Study 1, both asymmetry and variation had a substantial influence, as we hypothesized In contrast, neither aspect of heterogeneity had a significant main effect in Studies 2 and 3, which included bundles of complementary items A reason we observed an effect of heterogeneity in connection with substitute items (consistent with prior theoretical work) but not for complementary items might be that the influence of heterogeneity was overshadowed by that of product complementarity in Studies 2 and 3

However, we found support for the novel predicted interaction effect between asymmetry and whether the components are offered simultaneously in the one experiment that allowed a test of this hypothesis (Study 2) As we hypothesized, asymmetry in component valuations has a less negative impact on the relative profitability of bundle auctions when the separate component auctions are held in sequence than when they are held at the same time

Second, we found that complementarity between component products had an important impact on the relative profitability of bundle auctions versus separate component auctions across all three studies In the absence of complementarity, the allocative inefficiency of bundle auctions

TABLE 6
Summary of Key Results Across Studies

	Study 1	Study 2	Study 3
Products	Stamps	Stamps	Tangible and services
Type of products	Substitutes	Complements	Both
Number of auctions	168 (56 bundles)	144 (48 bundles)	288 (96 bundles)
Hypotheses			
Supported	H_1, H_2, H_3,	H_3, H_4, H_5	H_3, H_4
Not supported		H_1, H_2	H_1, H_2, H_6
Comparison of Bundle Auctions Versus Separate Component Auctions			
Revenue			
Substitutes	$11 34 versus $14 50	$24 87 versus $16 52	$51 42 versus $62 05
Complements			$61 52 versus $42 45
Number of Bidders			
Substitutes	6 6 versus 11 2	10 3 versus 16 8	5 5 versus 9 8
Complements			5 4 versus 9 6
Valuations (Survey)	Mean (range)		
Substitutes[a]	77 (39–1 24)	1 19 (83–1 78)	94 (82–1 36)
Complements			1 37 (95–2 65)
Main Findings: Auction Revenue			
Substitutes[a]	80 (20–3 05)	1 51 (57–4 47)	83 (24–1 07)
Complements			1 36 (96–2 75)
Summary of Key Findings	Significantly lower revenue from bundle auctions for substitute goods, both aspects of heterogeneity influence revenue	Significantly higher revenue from bundle auctions for complements, mixed bundling reduces difference in revenue between bundle and component auctions	Bundle revenue is greater for complementary services, mixed bundling reduces revenue from bundle auction for complements (relative to pure bundling) and increases revenue from component auctions for noncomplements, outside availability does not moderate the effect of complementarity

[a]Valuations (survey) or revenue (auctions) for bundle relative to sum of separate components

results in higher revenue from separate auctions than from a single auction for the bundle

Moreover, we find substantially lower bundle revenue for substitute items, with the bundle in some cases actually selling for less than one of its components In Studies 1 and 3, we observed this for 45 8% and 31 8% of bundles consisting of substitutes, respectively It is also worth noting that 42 9% of such instances in Study 3 occurred when the bundle auction and the corresponding component auctions were held simultaneously as adjacent listings

However, we also show that in the case of complementarity between components, a bundle auction can lead to substantially higher revenue than a set of component auctions Revenue from bundle auctions for complementary items exceeded that from corresponding separate component auctions by an average of 50 5% and 49 8% in Studies 2 and 3, respectively Moreover, the empirical evidence reveals that even a small degree of complementarity between components is sufficient to render bundle auctions substantially more profitable This finding is in contrast to Subramanian and Venkatesh's (2009) analytical results for sealed-bid auctions, which suggest that separate auctions outperform bundle auctions for low levels of complementarity This discrepancy in conclusions might be due to ascending auctions (e g , those used in the studies we presented herein) amplifying the exposure risk associated with separate component auctions Examining the potential moderating role of auction format (e g , sealed-bid versus ascending) with respect to the findings of this article would be a worthwhile area for further research

Third, different multi-item selling strategies also have an important influence on the relative profitability of bundle auctions We compared the results of the three multi-item selling strategies commonly used in a fixed-price settings—a pure components strategy, a pure bundling strategy, and a mixed bundling strategy The results provide novel insights into bundling in auctions relative to bundling in fixed-price settings (see Stremersch and Tellis 2002) For complementary items, we find that a pure bundling strategy, in which the bundle auction is held in isolation (without the components being available separately), tends to maximize revenue In the absence of complementarity, the results indicate that separate component auctions tend to result in the highest revenue These findings are in contrast to fixed-price settings, in which a mixed bundling strategy outperforms all other multi-item selling strategies, as long as there is some heterogeneity in consumer valuations (Stremersch and Tellis 2002)

Competition Among Bidders and Exposure Risk in Component Auctions

The empirical evidence demonstrates that separate auctions of complementary components result in less aggressive bidding due to the risk of winning only one of the items and not obtaining the complementarity (i e , the exposure risk) In particular, further analyses show that the comparatively high revenue from bundle auctions of complementary items is due to the exposure risk associated with separate component auctions and not to increased demand in bundle auctions For the data from each of the three studies, we conducted mediation analyses for the effect of the number of bidders on relative bundle revenue However, the number of bidders did not influence revenue in any of these cases

Krishna and Rosenthal's (1996) theoretical analyses indicate that increased competition among bidders enhances the exposure risk in separate component auctions for complementary items, which should lead to less aggressive bidding However, in contrast to these theoretical predictions, we found no evidence of such adaptation of bidding strategies in the studies Notably, in Study 3, in all but two cases, the same bidder won both the component auctions for highly complementary items Because of the exposure risk, these bidders were able to obtain both items at significant savings However, we observe some instances in which bidders appeared to get into bidding wars in separate component auctions, resulting in higher combined revenue than that from the corresponding bundle auctions Additional research is needed to examine the conditions under which either of these effects (i e , that of exposure risk versus that of a bidding war or bidding "frenzy") might dominate the other

Managerial Implications

The findings of this research have important implications for retailers and manufacturers that are increasingly using online auctions as an alternative channel of distribution For these sellers, determining the profit-maximizing strategy for offering multiple items is of great importance Should a set of goods be bundled or offered separately? If they are sold separately, should they be offered simultaneously or sequentially? The results of the studies show that substantial differences in profitability can result, depending on the type of product and the selling format

What is the optimum multiproduct selling strategy? While the combined revenue from separate component auctions tends to be higher than revenue from a corresponding bundle auction in the absence of complementarity, even a modest degree of complementary between items can cause a bundle auction to result in substantially higher revenue The relative profitability of bundle auctions is particularly high for services, according to the results of Study 3 Moreover, pure bundling tends to dominate mixed bundling and pure components strategies for complementary items, while a pure components strategy tends to be more profitable than the two other multi-item selling strategies in the absence of complementary

With respect to the timing of separate component auctions, the findings of Study 2 show that the profit-maximizing strategy for selling complementary items is to offer the components simultaneously rather than sequentially The intuition behind this result is that bidders are less likely to be aware of all (both) component auctions when the latter are held at different times (rather than simultaneously), and thus bids in the separate auctions are less likely to reflect the complementarity between the items However, this effect is mitigated when there is asymmetry in bidders' valuations of the components (see H_5)

The results also have important implications for the selection of specific types of products for bundle auctions We observed significantly greater differences in the relative profitability of bundle auctions for services than for tangible goods On the one hand, the time-critical nature of services (e g , tickets for concerts or sporting events) seems to increase the exposure risk associated with separate component auctions for complementary items, resulting in less aggressive bidding in these auctions and greater profitability of bundle auctions On the other hand, for services that are substitutes, bundling results in substantially lower revenues than separate auctions, which may be due to greater differences in tastes—such as in the case of a bundle consisting of tickets for an orchestra performance and tickets for a National Hockey League game

Finally, sellers are better off selling component products as a bundle when these items are more difficult to obtain elsewhere Prior work on bundling in fixed-price settings has considered flexible product supply, while auction theory has assumed a supply of one unit Because exposure risk plays a more significant role in the latter case, we expected bidders' perceived exposure risk to be lower if the complementary items could be easily purchased elsewhere, resulting in more aggressive bidding in the separate component auctions Surprisingly, however, the magnitude of the effect of complementarity was not influenced by the outside availability of the component products, suggesting that bidders tend to focus on the availability in the auction market and, therefore, that sellers have somewhat of a captive market

Limitations and Further Research

This article examined the relative profitability of different multi-item auction strategies through controlled field experiments Although this paradigm has many highly desirable properties (including that the empirical evidence is based on actual purchases), it has the limitation that we observed only the outcome (i e , revenue) of each auction In particular, this approach did not enable us to examine the willingness to pay of all bidders for both the bundles and the separate component items

To shed some light on this, we conducted an additional (Internet-based) study in which each of 93 stamp collectors participated in 12 actual second-price sealed-bid auctions for sets of stamps We independently manipulated the multi-item selling strategy (as in Study 3) and the number of bidders per auction (2 versus 10) using a within-subject design All bundles entailed complementary components The key finding of this study is that sealed bids in bundle auctions (M = $51 94) were higher than their combined bids in corresponding separate component auctions (M = $44 98, $p <$ 05) This replicates the findings of the field studies in a more tightly controlled setting in that it shows higher bundle revenue at the level of the individual bidder, which rules out bidder entry (e g , the self-selection of bidders into bundle auctions) as an alternative explanation Critically, this finding provides more direct evidence of how exposure risk leads to less aggressive bidding in separate component auctions for complements (compared with bundle auctions) Contrary to theoretical models (Krishna and Rosenthal 1996) but consistent with evidence from the field studies, this was not moderated by the number of bidders This suggests that exposure risk due to increased competition did not result in lower bids (Detailed results of this study are available on request)

Additional research is needed to develop a richer understanding of how the various aspects of bundle composition—such as the number of component items to include in a bundle, as well as the complexity, uniqueness, and similarity of the component products (Agarwal and Chatterjee 2003)—affect the relative profitability of bundling in auctions Another important area for future work is consumers' construction of their valuations of bundled goods, particularly against the background of recent findings suggesting that valuations of products can be influenced by the items with which they are bundled (Popkowski Leszczyc, Pracejus, and Shen 2008) Finally, further research is needed to explore factors that might underlie consumers' perceptions of complementarity and fit between products both in general and in the specific context of bundle auctions

A counterintuitive empirical result in the studies reported in this article is that in some instances, one of the components sold for more than a bundle that included this component (along with another item) In Study 3, we observed several such cases even when the bundle auction and the separate component auctions were held simultaneously Further research should examine this phenomenon more closely

Research should also investigate the trade-off between reduced revenue due to the allocative inefficiency of bundle auctions and increased revenue due to the transactional efficiencies of bundling Moreover, although we examined component auctions that were held either strictly simultaneously or at different times, an important extension of this work would be to consider auctions that partly overlap in time (see Zeithammer 2006) The conceptual model introduced and tested in this article is an important step toward a more complete understanding of the complex interplay between the forces that determine the profitability of different strategies for selling multiple products in auctions

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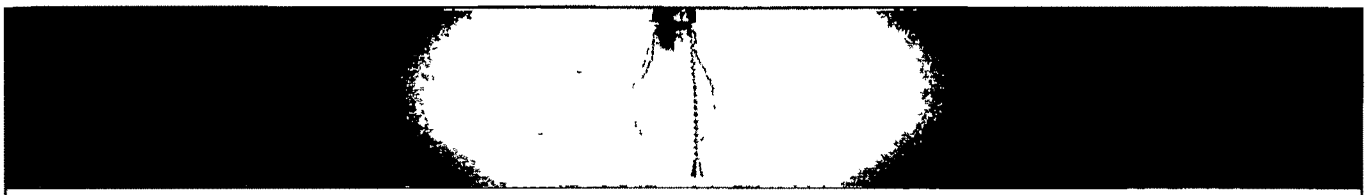

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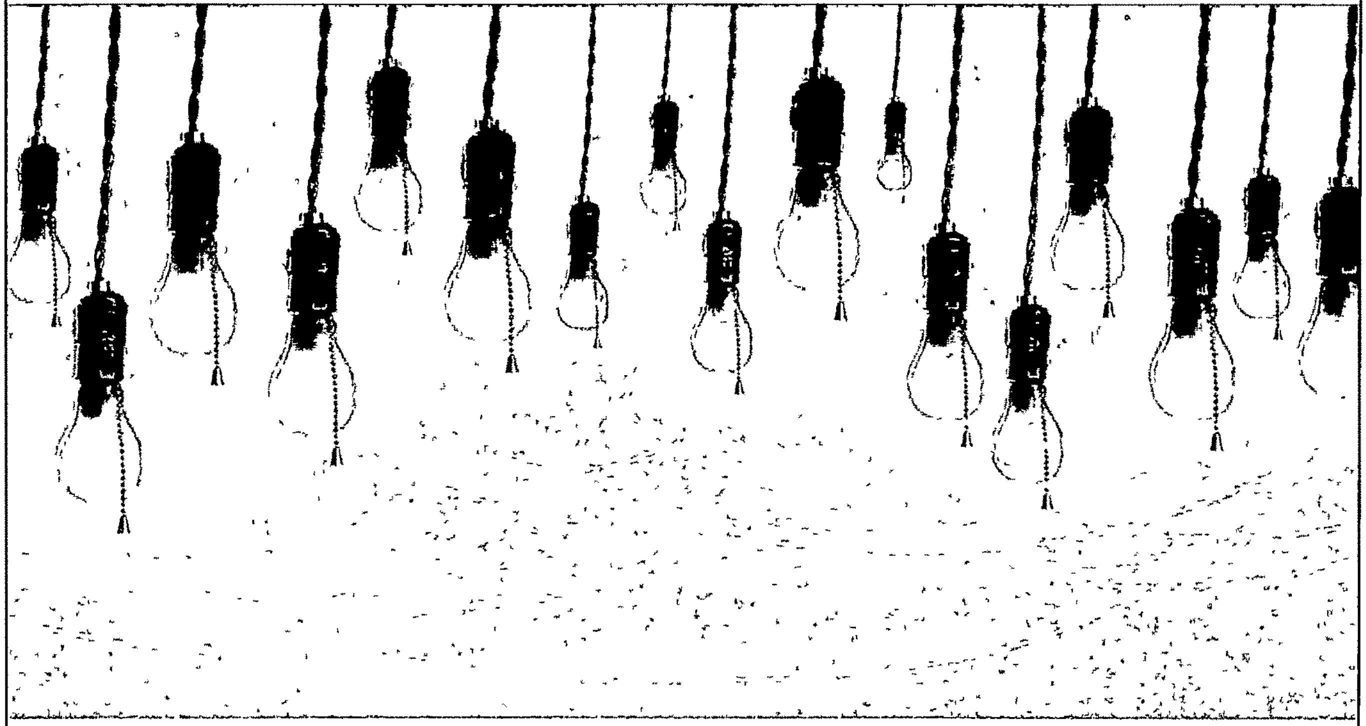

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From the Editor: The State of the Journal

It has been two years since I assumed the editorship of *Journal of Marketing* (*JM*). I would like to share with you my thoughts on the state of the journal and the outlook for the coming year.

In a nutshell, *JM* is in excellent shape. The journal attracted more than 500 new submissions in my first year and approximately 550 new submissions in the second year of my tenure. These numbers are all-time highs and are significantly higher than submissions in previous years. I am enthused by the fact that a substantial number of submissions are from outside the United States, primarily from Europe and increasingly from Asia. This is exciting! In addition to submitting manuscripts, non-U.S. scholars are increasingly contributing to the manuscript review process. As I travel internationally, I am struck by the great regard people have for the journal. And for good reason. It has the highest number of citations, the highest five-year impact factor, and the highest two-year impact factor (adjusted for self-citations) among all marketing journals (Institute for Scientific Information 2009). As such, *JM* is truly a global top-tier journal.

As is well known, *JM* critically depends on authors submitting high-quality work to the journal. It also depends on its editorial review board (ERB) and ad hoc reviewers for critical but constructive reviews. I am thankful to authors who send their work to the journal and diligently incorporate reviewers' suggestions for improving their manuscripts. I am also grateful to the ERB members and ad hoc reviewers who devote quality time and effort to critically evaluate submissions and provide useful suggestions for strengthening the manuscripts they review. The journal simply could not operate without their conscientious support, and I am grateful to them for their expertise and time.

To deal with the increasing flow of manuscripts, *JM* moved to a coeditor system effective September 1, 2009, with Gary Frazier and Bob Leone joining hands with me as coeditors. Manuscripts are assigned on a rotation basis to Bob, Gary, and me. Thus, each of us processes papers on a variety of topics and using a variety of methods. Each co-editor selects reviewers for the papers he is processing and makes decisions on those manuscripts. The system is designed in this way to ensure that the same standard of acceptance is applied by a coeditor uniformly across all papers, regardless of their topic or method. To make the system work effectively, the three of us spent several weeks in August and September 2009 calibrating our standards and hammering out details to ensure uniformity across the coeditors. In addition, we hold weekly conference calls that often last more than a few hours, and we consult with one another as specific points or questions come up in the course of processing our respective manuscripts. The three of us have spared no effort to ensure that we are on the same page with regard to all matters related to the journal and are very pleased with the way the system is working. The new system has also reduced the turnaround times significantly, with most decisions on new submissions now being made in less than 60 days, and often even quicker.

Looking forward, I believe that the future of *JM* is bright. Interest in publishing in the journal continues to grow stronger. The diversity of the topics and methods it publishes continues to expand. Since *JM* moved to six issues per volume in 2008, the lead time for publication after a manuscript's final acceptance has decreased and is of the order of six months. The upshot of this is that authors now can see their papers in print more quickly.

In conclusion, the state of the journal is excellent, and the future looks bright. Many thanks again to the authors for their hard work and interest in *JM* and the ERB members and ad hoc reviewers for their outstanding service. I look forward to working with you over the coming months.

AJAY K. KOHLI
Editor in Chief

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Journal of International Marketing

Global Marketing Managers: Addressing Challenges Posed by the Changing Global Economy

Global marketing managers are at the heart of effective strategy execution. Unfortunately, limited research exists to understand the skills, knowledge, and strategies that make managers effective, most notably as they face new challenges brought forth by the changing global economy.

The global economic crisis has highlighted the importance of managerial skills in rebalancing the global economy. For example, how does one pursue increased output in consumption-driven economies coupled with the pursuit of consumption stimulation in export-oriented economies. These changes require new skills, knowledge, and roles of global marketing managers.

Topics could include, but are not limited to:

Similarly, the changes in the global economy may create a need to rethink managerial approaches to issues such as risk, profit, competition, and ownership. For example, (1) whereas managers were traditionally willing to trade off risk for return, in today's global economy, how do managers avoid risk regardless of return? (2) How have global marketing managers readjusted strategies as profits are exposed to selective taxation? (3) How have global marketing managers adjusted newly evolving competitive conditions? and (4) How do global marketing managers adapt strategies to compete against new, government directed competitors?

Manuscripts may be conceptual or empirical. All manuscripts should have direct practitioner relevance.

- Global marketing manager strategies for assessing and addressing the rebalancing of the global economy
- Global marketing manager efforts for cross-border strategy integration in relation to the re-balancing of the global economy
- Global marketing manager employment of technology for coordinating cross-country strategies in changing times
- The changing role and responsibilities of global marketing managers
- Global marketing manager perspectives and approaches to the repositioning of issues in the new global economy (i.e., risk, profit, competition, and ownership)
- Identification of the skills making global marketing managers effective
- Psychological characteristics of effective global marketing managers in changing times
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V. Kumar, J. Andrew Petersen, & Robert P. Leone

Driving Profitability by Encouraging Customer Referrals: Who, When, and How

Many firms are now using referral marketing campaigns to harness the power of word of mouth and to increase referrals to acquire new customers Prior research has identified a method of computing the value of referrals using only a customer's actual past referral behavior to compute customer referral value (CRV) In this article, the authors develop and test a new four-step approach to compute CRV In addition, they determine the behavioral drivers of CRV and then identify the most effective methods of targeting the most promising customers on the basis of their customer lifetime value (CLV) and CRV scores The authors illustrate and test this approach through four separate field experiments with firms from two industries financial services and retailing They find that to maximize profitability, it is critical to manage customers in terms of both their CLV and CRV scores and that understanding the behavioral drivers of CRV can help managers better target the most profitable customers with their referral marketing campaigns

Keywords customer referral value, field studies, Bayesian Tobit model, customer lifetime value

Consumers frequently rely on word of mouth and referrals (active) and observational learning (passive) from other consumers when making a purchase decision (Dichter 1966) In some cases, the referral has a positive impact on their purchase decision, and in other cases, it does not alter their decision In this article, we define a referral as when a new customer enters into a transaction with a firm and attributes the motivation for the transaction to a current customer Research has shown that customers spread word of mouth and generate customer referrals in various situations, including during new product diffusion (Mahajan, Muller, and Bass 1995) or when making general purchase decisions, in which they often seek others' opinions (Feick and Price 1987)

Thus, we know that word of mouth and referral behavior play a role in consumer decision making and purchase behavior The challenge that practitioners face is finding a way to use the information about word of mouth and referral behavior when managing customers Although the existence of word of mouth and referral behavior has been studied in the marketing literature, only a few studies have examined the monetary value of word of mouth and referral behavior or how information about word of mouth or referral behavior can be used to manage customers effectively This is important because, as Rust, Zeithaml, and Lemon (2000, p 46) note, "the effect [of word of mouth] is notoriously hard to measure, but is frequently significantly large" Research has also shown that firms that acquire customers through referrals are acquiring more profitable customers, which makes it desirable to run referral marketing campaigns (Villanueva, Yoo, and Hanssens 2008)

Several studies in the marketing literature have shown that measuring the value of word of mouth or referrals can provide several key implications for managing customers and that referral marketing campaigns can be highly valuable However, these studies do not help marketing managers with the selection of the "best" customers for these referral marketing campaigns We summarize the key contributions and implications from these prior studies in comparison with the contributions and implications of the current study in Table 1

During the past few years, many managers have adopted metrics such as "Net Promoter score" (Reichheld 2003) to strategically manage firm revenue growth However, as Keiningham and colleagues (2007) empirically show, the Net Promoter score shows only a weak link to a firm's revenue growth, leading to an ongoing debate over the issues with measuring and managing metrics that predict firm and customer growth[1] Given this finding and the interest in

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V Kumar is Richard and Susan Lenny Distinguished Chair in Marketing, Executive Director of the Center for Excellence in Brand & Customer Management, and Director of the PhD program in Marketing, J Mack Robinson School of Business, Georgia State University (e-mail mktvk@langate gsu edu) J Andrew Petersen is Assistant Professor of Marketing and Assistant Director for the Center of Integrated Marketing and Sales (CIMS), Kenan-Flagler Business School, University of North Carolina at Chapel Hill (e-mail Andrew_Petersen@unc edu) Robert P Leone is a professor and J Vaughn and Evelyne H Wilson Chair of Marketing, Neeley School of Business, Texas Christian University (e-mail r leone@tcu edu) The authors thank Wagner Kamakura, Roland Rust, Ruth Bolton, Robin Coulter, Susan Spiggle, Jeff Inman, Bob Burnkrant, Barak Libai, Carl Mela, Linda Price, Sunil Gupta, Peter Verhoef, John Mathieu, and Kay Lemon for their comments on a previous version of this article Special thanks are also owed to a retail firm and a financial services firm for sharing their data Marnik Dekimpe served as guest editor for this article

[1] See the *Journal of Marketing* blog at http //www marketingpower2 com/blog/journalofmarketing/2007/07/a_longitudinal_examination_of html (accessed May 13, 2010)

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TABLE 1
Contributions of the Current Study Relative to Prior Studies

Criteria	Helm (2003)	Hogan, Lemon, and Libai (2003)	Hogan, Lemon, and Libai (2004)	Ryu and Feick (2007)	Kumar, Petersen, and Leone (2007)	This Study
1 Computation of referral value	N A	Value lost from customer churn	Word-of-mouth multiplier from advertising	Referral likelihood based on rewards	Actual past referral behavior	Predicted future referral behavior
2 Key objective of the article	Reviewing three approaches to computing referral value	A method to account for social effects in the management of customers	Quantifying the advertising ripple effect	Determine the effectiveness of rewards for referral marketing	Comparison of customer segmentation based on CLV and CRV	Optimal customer targeting for referral marketing campaigns
3 Contribution to marketing	An extensive literature review	Customers cannot be valued in isolation because of word-of-mouth effects	Managers should account for customer word-of-mouth interactions when advertising	Shows how extrinsic motivations affect customer referral behavior	Computing past referral value of each customer	Determining behavioral drivers of referral value, which can help in targeting customers for referral marketing campaigns
4 Field experiment(s) and/or empirical application	N A	A simulation exercise using data collected about the online banking market	A survey of students based on their hair salon choice and the amount of word of mouth they engaged in following the last haircut	A series of four laboratory experiments that investigate the effects of different types of rewards on different types of customers	Simple field experiment with a telecommunications firm based on computed CLV and CRV in which all customers were targeted with an incentive to make referrals	A series of field experiments with a financial services firm that uncover the most effective way to target customers for referral marketing and cross-sell/up-sell campaigns and a driver-based field experiment with a retailing firm that shows the effectiveness of using the drivers of CRV as a method for customer selection and resource allocation
5 Key learning	The three models discussed offer insights into the determinants and effects of word of mouth	The value of a lost customer changes as a function of the time in the product life cycle	The word of mouth generated after an advertising-motivated purchase can be significant	Offering a reward increases referral likelihood, but the size of the reward is not significant	Customers with high CLV are not the same as customers with high CRV	Firms can effectively select customers within segments of high and low CLV/CRV for referral marketing campaigns using the drivers of CRV (dynamic targeting)

Notes N A = not applicable

developing a better understanding of these issues, it is important for research in marketing to address the following three research questions

- Q_1 Is it possible to predict each customer's indirect impact on the firm's future profits (i e , through referral behavior)?
- Q_2 Which current customers are likely to add the most value to the firm through referral activities?
- Q_3 How can managers design marketing campaigns that most effectively select customers for referral marketing campaigns?

We answer Q_1 in the following way We measure customer lifetime value (CLV) and customer referral value (CRV) of each customer To predict CLV, we used a method already established in the marketing literature (Kumar et al 2008) We then develop a new four-step approach for predicting CRV with information from a customer's past referral behavior We show that this new approach offers accurate predictions of a customer's future referral behavior We then use each customer's predicted CLV and CRV scores in three field experiments with a financial services firm The results of these field experiments show the following

- Customers with a high CLV are not necessarily the same customers as those with a high CRV Therefore, a customer must be managed using both CLV and CRV
- It is important not to saturate each customer with multiple marketing messages but rather with messages that have the highest likelihood of increasing CLV or CRV

Next, we empirically determine the behavioral drivers of predicted CRV using a retail firm's customer database to answer Q_2, which includes each customer's transaction and referral behavior Then, we run a fourth field experiment with the same retailing firm to answer Q_3 The insights gained by answering Q_1–Q_3 can help firms target customers who are most likely to respond positively to a referral marketing campaign We also demonstrate the positive financial consequences of adopting the proposed process in creating and targeting an effective marketing strategy

Measuring CLV and CRV

Customer Data

We collected the data used in this study for measuring CLV and CRV between July 1, 2001, and June 30, 2005 (four years) for 14,160 customers on a semiannual basis from a financial services firm that ranks high among the global *Fortune* 1000 firms This financial services firm has a wide range of products and services, including banking, insurance, and investments We provide a list of products this financial institution provides along with the average profit per month for each product for each customer in Table 2 As Table 2 shows, the average monthly profit for each product ranges from approximately \$13 (current account) to approximately \$92 (home loan)

TABLE 2
Products Currently Offered by the Focal Financial Services Firm

Product Category		Average Monthly Profit (SD)	
1	Current	13 20	(25 2)
2	Saving	28 09	(36 8)
3	Deposit	42 77	(77 8)
4	Invest	35 90	(40 1)
5	Insurance	28 70	(35 6)
6	Overdraft	48 70	(63 4)
7	Personal loan	40 40	(59 6)
8	Home loan	92 72	(118 1)
9	Vehicle loan	31 06	(52 5)
10	Cards	25 78	(41 4)

Notes Average monthly profit across product categories per customer

Additional customer data from the financial services firm include data collected from those same 14,160 customers during the three field experiments We conducted these experiments over a one-and-a-half-year period (July 1, 2005–December 31, 2006) immediately following the end of the initial data collection The data included each customer's own purchase behavior, the estimated marketing costs associated with attracting and retaining each customer, the actual referral behavior of each customer, and the transaction data for any new customer who was referred to the financial services firm by one of the original 14,160 customers in the sample and purchased at least one product The data set also included the findings from a survey given to each of the 14,160 financial services firm's customers in July 2004 that provided information on their "willingness to refer" new customers We used all the initial customer data from the first four years for three purposes (1) to calibrate and test the predictive accuracy of the computed CLV values, (2) to calibrate and test the predictive accuracy of the computed CRV values, and (3) to empirically test whether there is a link between "willingness to refer" and actual referral behavior We then used each customer's CLV and CRV scores as a basis for customer selection in the first three field experiments

Computing CLV

To measure the CLV of each customer, we used Kumar and colleagues' (2008) model, which calculates the expected future profitability of a customer purely on the basis of behavioral and demographic customer information This is given in Equation 1

$$\text{(1)} \qquad CLV_i = \sum_{j=T+1}^{T+N} \frac{p(Buy_{ij}=1) \times \hat{CM}_{ij}}{(1+r)^{j-T}} - \frac{\hat{MC}_{ij}}{(1+r)^{j-T}},$$

where

CLV_i = lifetime value for customer i,
$p(Buy_{ij})$ = predicted probability that customer i will purchase in period j,
CM_{ij} = predicted contribution margin provided by customer i in period j,
MC_{ij} = predicted marketing costs directed toward customer i in period j,
j = index for time periods (semiannual in this case),
T = the end of the calibration or observation time frame,
N = total number of prediction periods, and

r = semiannual discount factor (07238 in this case, this amounts to a 15% annual rate)

Prior research has empirically demonstrated that this model accurately measures each customer's CLV, the model can also be used to maximize CLV by optimizing all the marketing resource variables (e g , e-mail, direct mail, face-to-face costs and frequencies) that managers can control in terms of marketing expenses For complete details of the procedure for estimating the model, see Kumar and colleagues (2008)

We tested the predictive accuracy of this model on the customers from the financial services data set We used the first three years of data to determine the drivers that help predict the CLV for each customer We then used this information to predict the CLV of each customer for the fourth year, which represents the holdout period We then compared this predicted value with the actual discounted profit calculated for each customer during the one-year holdout period The absolute value of the difference between the actual CLV and the predicted CLV for each customer from the financial services firm was just under 10% (mean absolute percentage error [MAPE]), or approximately $27 (mean absolute difference [MAD]) per customer (average CLV was approximately $274) This provides strong evidence that the CLV model can be used to accurately predict each customer's future value to the firm

Computing CRV

We measured CRV for each customer using the objective function from Kumar, Petersen, and Leone (2007) given in Equation 2 We advance the measurement of CRV from the previous study by introducing a new four-step approach for predicting each customer's CRV using past customer transaction and referral data This is a key advancement of and improvement over Kumar, Petersen, and Leone's model because they simply use the previous period's actual referral behavior value, and in the current research, we predict referral behavior into the future using past customer referral data

$$\text{(2)}\qquad \mathrm{CRV}_i = \sum_{t=1}^{T}\sum_{y=1}^{n1}\frac{A_{ty} - a_{ty} - M_{ty} + \mathrm{ACQ1}_{ty}}{(1+r)^t} + \sum_{t=1}^{T}\sum_{y=n1+1}^{n2}\frac{(\mathrm{ACQ2}_{ty})}{(1+r)^t},$$

where

T = the number of periods that will be predicted into the future (e g , years),

A_{ty} = the gross margin contributed by customer y who otherwise would not have bought the product,

a_{ty} = the cost of the referral for customer y,

n1 = the number of customers who would not join without the referral,

n2 – n1 = the number of customers who would have joined anyway,

M_{ty} = the marketing costs needed to retain the referred customers,

r = semiannual discount factor (07238 in this case, this amounts to a 15% annual rate),

$\mathrm{ACQ1}_{ty}$ = the savings in acquisition cost from customers who would not join without the referral, and

$\mathrm{ACQ2}_{ty}$ = the savings in acquisition cost from customers who would have joined anyway

To predict CRV, it is important to consider four aspects of the referral process First, the timing of the referral is important to determine the proper discounting Second, knowing how many referrals will be made each year and how each of these referrals will contribute to the gross margin of the firm is critical Third, if a firm rewards referral behavior (i e , offers any incentive to the customer making the referral), the cost of that incentive must be subtracted from any value attached to the referring customer Fourth, if a new customer comes directly from the referral process, the money the company saves in the acquisition cost must be considered These acquisition cost savings can be applied to two groups of people customers who would have joined anyway at some time in the future and those who joined only because of the referral For customers acquired only as a result of the referral, it is important to count the entire transaction value of the referred customer because the company would not have realized this sale otherwise However, in the case of a customer who would have joined anyway, only the savings in acquisition cost is counted, even if the customer was acquired through a referral When all these components are considered, a customer's referral value to the firm can be calculated as in Equation 2 We provide a sample calculation of CRV for a single customer in Web Appendix W1 (http //www marketingpower com/jmsept10)

Rather than using a measure of willingness or intention to refer, we use the past referrals and the corresponding referral values to predict the number of future referrals and the value of those referrals We believe that this is a better approach because Keiningham and colleagues (2007) find that stated intentions of future referrals are poorly linked to revenue growth and Kumar, Petersen, and Leone (2007) find that stated willingness to refer is poorly linked to actual referral behavior We also found supporting evidence about the gap between stated intentions to refer and actual referral behavior for the data in this study The focal firm in this study conducted a survey of the 14,160 customers in the sample to better understand what mechanisms were driving the growth of new customers from referrals In July 2004, the entire sample from the financial services firm (14,160 customers) was asked whether they were willing to recommend new customers to the firm We analyzed the data from July 2004 to June 2005 for each customer's actual referral behavior, along with the purchase behavior and the profitability of the referred customers [2]

The findings from the analysis show that there is a definite gap between a customer's stated willingness to refer and his or her actual referral behavior For example, 70% (9492) of customers stated that they intended to make referrals However, only 44% (n = 4204) of those who stated this actually made attempts at referrals In addition, only 42% (n = 1763) of these attempts at referrals actually resulted in prospects making a purchase (i e , a successful referral) Finally, only 77% (n = 1356) of customers who made successful referrals brought in new customers who were profitable These findings show that using a measure such as willingness to recommend (Reichheld 2003) exaggerates what would actually happen and thus provides misleading information for use when managing customers for profitability

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[2] The customer's referral behavior was tracked electronically, which enabled us to observe both attempts at making referrals when e-mails were forwarded to potential customers and whether that referred customer actually purchased

Determining an Individual Customer's CRV

To predict the value of a customer's referrals, we must understand how the flow of information moves from customers to potential prospects Thus, we propose a four-step approach to determine each customer's CRV that will make it more straightforward to implement within different organizations First, we determine whether the referred customer would have bought the product or service without a referral Second, we predict the average future value of each referred customer Third, we predict the future number of referrals each customer will make in a given period Fourth, we predict the timing of the predicted future referrals

Step 1 Determine whether a customer would have bought anyway To determine whether the referred customer would have purchased without the referral, the firm asked each newly acquired customer the following question "How likely is it that you would have subscribed to this service in the next 12 months without a referral?"[3] This question used a five-point scale (1 = "definitely no," and 5 = "definitely yes") The purpose of using a five-point scale was to determine whether there was any incremental difference between the strength of the referral as the responses moved from 1 to 5 That was not the case, because the responses were bimodal, with the modes being 1 and 5 Therefore, we mapped the results from the five-point scale to a binary (0/1) scale for the analysis[4] A different approach could be used if there were a situation in which the distribution of responses was not bimodal[5]

Step 2 Predict the future value of each referred customer We used the following approach to predict the future value of each referred customer First, using the three years of data for each customer (July 2001–June 2004), we computed the average semiannual contribution margin from referrals for each customer This was done by examining each customer's referrals and computing the average gross profits that each referral brought to the firm in each period during the three years To check the validity of using this as a measure of future gross profits (A_{ty}), we used the simple six-period moving average values for each referral per period in the holdout year (July 2004–June 2005)[6] Second, we used the past marketing costs (M_{ty}) to predict the average cost of retaining each customer's referral We did this by examining the past marketing expenses for each period and projecting that average marketing cost into the future Although we used the averages of the past values to predict the future values of contribution margin and marketing costs for referrals, we found a high correlation between the actual and predicted values of A_{ty} and M_{ty} The correlation coefficient was 79 between the actual and predicted A_{ty} and 83 between the actual and predicted M_{ty} across all customers In terms of predictive accuracy, the MAPE between the actual and predicted values is 14 2% for A_{ty} and 11 1% for M_{ty} This provides further evidence that this method can accurately predict contribution margin and marketing costs for customers

Step 3 Predict the number of referrals We used a similar method to predict the future number of referrals (n2) each customer was likely to make This number is based on using the average number of referrals per year across the first three years for each customer (July 2001–June 2004) and projecting that number into the holdout year (July 2004–June 2005)[7] We found that the average number of past referrals was also a good predictor of the actual number of referrals a customer made in the future When we computed the average number of referrals on the basis of past referral behavior, we rounded it off to the nearest integer The correlation between the actual and predicted number of referrals is 80 In terms of predictive accuracy, the MAPE between the actual and predicted number of referrals is 17%, which shows that this method is accurate in predicting the number of referrals a customer will make in the future

Step 4 Predict the timing of customer referrals The timing of the referrals was based on the average timing of past referrals by each customer For example, because the financial services firm collected data semiannually, we were able to split the prediction of timing of referrals into two six-month periods, July–December ("the first half") and January–June ("the second half") If the customer averaged six total referrals per year and all the referrals came in the first six-month period, in the CRV prediction, all the referrals would be credited to that specific period Splitting up the timing of referrals into two periods is important because it can have a dramatic impact on the value of each customer's CRV The earlier a customer makes a referral not only accelerates the time when the firm receives the profit from the referred customer but also adds the benefit of allowing more time for the new customer to make his or her own referrals The average proportions of first-half and second-half referrals from the first three years were projected into the holdout year to compute CRV Again, the average was a good predictor of future referral timing because the correlation between the actual and predicted number of referrals in each period was 82 and 79, respectively Similarly, the MAPE between the actual and predicted number of referrals in each period is 16% and 19%, respectively, showing a strong fit between the model predictions and the actual results

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[3] Customers are being asked to think about whether the purchase they made was either an accelerated purchase (i e , would have joined anyway) or an unplanned purchase (i e , would not have joined without the referral) In other words, this is a recall measure in which customers are reflecting on a recently made purchase We believe that this recall measure is more accurate than the purchase intention measure

[4] If the customer responded with a 4 or 5, we considered him or her a customer who would have joined without a referral Alternatively, if the customer stated that he or she became a customer only because of the referral (1, 2, or 3), we estimated his or her future value and included this as part of the CRV for the referring customer

[5] In certain instances, the probabilistic method would be a better choice for determining which referred customers would have bought anyway These situations could include where the distribution of responses to the survey question is more uniform (versus bimodal), where the prediction of number of referrals is not merely based on a past average (e g , number of referrals is modeled as a function of a set of variables), or in an environment that is less stable than this current case (e g , high-growth industries) In this case, a firm could predict the probability of each newly referred customer joining anyway (p) and then compute the probability of that customer joining only because of the referral ($1 - p$) Then, CRV could be computed in the following manner For each newly referred customer, the acquisition cost savings would be added to ($1 - p$) × (expected value of the newly referred customer)

[6] The one-year prediction of A_{ty} starting in semiannual period 7 ($A_{7y} + A_{8y}$) would be computed in the following manner A_{7y} = avg(A_{1y}, , A_{6y}) and A_{8y} = avg(A_{2y}, , A_{7y})

[7] We did this using a three-period simple moving average because the data on number of referrals were at a yearly level

Predictive Accuracy of CRV

In addition to showing that the results of the individual steps (e g , number of referrals, timing of referrals) produce predictions that are close to the actual values for each customer, we must also determine whether the overall prediction of CRV is able to capture the actual value of the referral behavior of each customer The results of the analysis show that we were able to accurately predict the CRV for each individual customer for the holdout year The correlation and the MAPE between the actual and predicted values of CRV across individuals is 77 and 18%, respectively, showing good predictive accuracy Across all the customers from the sample of customers we received from the financial services firm, we compared the actual value of each customer's CRV with the predicted value of that customer's CRV The MAD between the actual and predicted values of CRV was approximately $26 per customer based on the CRV of each customer (the average CRV for each customer was approximately $145) This shows that the new four-step approach for computing CRV we propose in this research not only accurately predicts the value of each part of the CRV model but also accurately predicts each customer's CRV in the holdout year using three years of past data

Field Experiments

We conducted four field experiments with the goal of quantifying the impact of measuring and managing both CLV and CRV simultaneously and determining the behavioral drivers of predicted CRV[8] We predict the value of CRV for each customer by projecting his or her past behavior into future periods using the four-step approach described previously The end result of these field experiments will show whether an intervention of a marketing campaign in a given period can cause a significant increase in the predicted CLV or CRV of a given customer In the case of CRV, for which the prediction is expected to mirror the past behavior, the results will show whether a marketing campaign can cause the current path of a customer's referral behavior to change (increase or decrease) during a given period

We conducted the first three field studies in succession using different customers of the financial services firm The first study took place in the third quarter of 2005, the second study took place in the fourth quarter of 2005, and the third study lasted for all of 2006 For each of these three studies, we discuss which customers participated in the study, which campaign each customer received (or did not receive), and the effect of the campaign We then discuss the retail firm data for the fourth field experiment in detail at the beginning of Study 4

Study 1

Purpose and Method

We used the first study as a pretest to help determine which customers would be most responsive to specific marketing campaigns (stimuli) that focused on increasing CLV or increasing CRV The participants of the experiment were 300 customers from the full sample of customers (14,160) from the financial services firm The experiment was a marketing campaign directed at these specific customers In July 2005, we randomly selected and sent the 300 customers a targeted marketing campaign that encouraged them to increase both CLV and CRV The customers were sent direct mail pieces with incentives to purchase bundled offerings for one or more products, such as savings accounts, checking accounts, and/or liability accounts, which, if effective, would increase their CLV The customers were also sent direct mail pieces with incentives to refer new customers by offering both them and the people they successfully referred a $20 credit toward their accounts, which, if effective, would increase the customers' CRV

Results

At the beginning of this marketing campaign, we measured the CLV and the CRV for each of the 300 customers in the study Using a median split of their initial July 2005 CLV and CRV values, we placed 75 customers in one of four segments (1) high CLV/high CRV, (2) high CLV/low CRV, (3) low CLV/high CRV, and (4) low CLV/low CRV At the conclusion of the marketing campaign (September 2005), we again measured each customer's CLV and CRV If the campaign had any significant effects on customers in any of the four segments, we should observe significant differences between the CLV and the CRV values before (July 2005) and after (September 2005) the campaign

For the high-CLV/high-CRV customers, there was no significant difference between the post- and the precampaign CLV (t = 92, p = 36) or CRV (t = 98, p = 33) In

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[8] Note that in the previous section, we used only a one-year-ahead prediction of CLV and CRV as a way to validate the model Given that we have four years of data for the field experiments, CLV and CRV are predicted out for three years, which represents a long-term strategic approach to customer management

both cases, the average gains in CLV and CRV were less than 1%, meaning that the campaign to this segment was not effective in increasing either CLV or CRV For the high-CLV/low-CRV customers, the campaign was successful at significantly increasing the average CRV (t = 174 2, p < 001), an average increase of approximately 20% However, it was not successful at significantly increasing the average CLV (t = 1 1, p = 27), an average increase of less than 1% For the low-CLV/high-CRV customers, the campaign was successful at significantly increasing the average CLV (t = 114 3, p < 001), an average increase of approximately 2 5% However, it was not successful at significantly increasing the average CRV (t = 1 26, p = 21), an average increase of less than 1% For the low-CLV/low-CRV customers, the campaign was successful at significantly increasing both the average CLV (t = 212 3, p < 001) by approximately 60% and the average CRV (t = 186 9, p < 001) by approximately 130%

Discussion and Limitations

Study 1 showed that some aspects of the marketing campaign were more effective for certain segments of customers In all cases, when the average customer's CLV (CRV) was below the median split, the campaign was effective at increasing his or her CLV (CRV) When the average customer's CLV (CRV) was above the median split, the campaign was not effective at further increasing his or her CLV (CRV) This suggests that low-CLV customers should be targeted with marketing campaigns to encourage them to cross-buy and add on services and that low-CRV customers should be targeted with marketing campaigns to encourage them to refer new customers to maximize the return on marketing investment In addition, this suggests that the two groups, which are high on one value and low on the other (e g , high CLV/low CRV), should not receive a campaign with both marketing messages

This raises the following question Although the firm might be tempted to send a direct mail piece with incentives to increase both CLV and CRV, does the effectiveness of a single campaign directed to these two segments, which are high on one value and low on the other, suffer when a second campaign aimed at increasing the high-scoring metric (e g , increase CLV for the high-CLV/low-CRV group) is also sent to them? This is possible because, as the number of incentives increase, the effective incentive could get lost in the clutter with other less effective incentives (Brown and Rothschild 1993) As a result, we expect that both the response rate and the overall profits gained from the campaign aimed at increasing a low-scoring metric would decrease To answer this question, we conducted a second study during the fourth quarter of 2005 (October 2005–December 2005)

Study 2

Purpose and Method

The second study with the financial services firm acted as a pretest to determine whether there was a significant difference in the effect of the marketing campaigns when the high-CLV/low-CRV and low-CLV/high-CRV segments are targeted with two marketing campaigns—one to increase CLV and one to increase CRV—versus when the segments are targeted with only a single campaign intended to increase the low-scoring metric There is almost no additional marketing costs to the firm to target customers with both marketing campaigns (the direct mail piece can easily include both campaigns) Thus, if the average increase in the low-scoring metric is not statistically different when one or both marketing campaigns are received, the firm might want to send an incentive with both campaigns However, as we noted previously, if there is a negative consequence because of the clutter, both should not be sent to the same customer

To conduct this second study, we randomly selected 600 customers from the remaining sample of 13,860 (14,160 less the 300 from the Study 1) and, as in Study 1, sorted the customers into the same four segments according to their CLV (high/low) and CRV (high/low) as of October 2005 Each of these four segments had 150 customers We then chose the 150 customers from the high-CLV/low-CRV segment and the 150 customers from the low-CLV/high-CRV segment to investigate the research question For these segments, we randomly split each into two groups of 75 customers We compared the average CLV and CRV values from the two groups of 75 customers within each segment and found no significant difference between the average values of CLV and CRV We did this to verify that we had two sets of matched pairs At the beginning of October 2005, we sent one group of 75 customers within each segment a targeted marketing campaign with two incentives—one to increase CLV and one to increase CRV The other group of 75 customers within each segment received only one targeted marketing campaign, an incentive to increase only the low-scoring metric (either CLV or CRV)

Results

We compared the postcampaign (December 2005) values of average CRV and average CLV within each segment across the two groups of 75 customers For the high-CLV/low-CRV segment, there was no significant difference between the postcampaign average CLV values for the two groups of 75 customers (t = 57, p = 57), both groups from the high-CLV/low-CRV segment had increases in average CLV of less than 1% However, the postcampaign average CRV values for the group targeted only with the campaign to increase CRV had a significantly higher average gain in CRV than the group targeted with both marketing campaigns (t = 3 50, p = 001) For the group that received only one campaign, the increase in average CRV was approximately 50%, while for the group receiving both campaigns, the increase in average CRV was approximately 20%

The findings were similar for the low-CLV/high-CRV segment There was no significant difference between the postcampaign average CRV values for the two groups (t = 83, p = 41), both groups showed increases in average CRV of less than 1% However, the postcampaign average CLV values for the group targeted only with the campaign to increase CLV had a significantly higher average CLV than the customers targeted with both campaigns (t = 3 40, p =

.001). For the group targeted with only one campaign, the increase in average CLV was approximately 10%. For the customers targeted with both campaigns, the increase in average CLV was approximately 2%, similar to the 2.5% increase we observed Study 1.

Discussion

The results of Study 2 showed that targeting the high-CLV/low-CRV and low-CRV/high-CLV customers with both marketing campaigns generates less profit than targeting these two segments with only the marketing campaign aimed at increasing the low-scoring metric. This result is noteworthy because it suggests that even though the cost of sending a direct mail piece with both campaigns is about the same as sending a direct mail piece with one campaign, adding the second campaign does not increase the high-scoring metric. It actually reduces the effectiveness of the campaign aimed at increasing the low-scoring metric. This most likely happens because of information clutter (or information overload). By adding the second campaign to increase the high-scoring metric, customers do not focus on (or notice) the campaign that should be effective in increasing the low-scoring metric (Brown and Rothschild 1993). This suggests the need for a third study in which the high-CLV/low-CRV and low-CLV/high-CRV segments are targeted only with campaigns to increase the low-scoring metric.

In addition, given the design of both Studies 1 and 2, there is a potential threat to internal validity due to regression to the mean. In Study 1, we observed that for all segments with a low-scoring metric, the average value of that metric after the campaign increased. In Study 2, we again observed that the average values of the low-scoring metric for customers from both segments increase after the campaign. Given that the objective of these studies was to suggest the most effective campaigns for each customer segment, this is less of an issue. However, the way we conducted Study 3 removes the potential concern of regression to the mean and provides stronger, additional evidence for these findings.

Study 3

Purpose and Method

The purpose of the third field study is to investigate whether targeting the right customer segment with the right marketing campaigns can lead to significant increases in both CLV and CRV for each customer segment. In addition, the third field study aims to increase the internal validity of the previous two field studies by removing any effect related to regression to the mean. The results from Studies 1 and 2 indicated that the best strategy is to target only three of the four segments with targeted marketing campaigns aimed at improving the low-scoring metric: high CLV/low CRV, low CLV/high CRV, and low CLV/low CRV. This is because the high-CLV/high-CRV segment did not show significant gains in either CLV or CRV in Study 1 and because Study 2 showed that targeting only the low-scoring metric was an optimal strategy. For the case of CRV, although the four-step approach predicted that these customers would have a high CRV, it was not incrementally higher than in the previous period. There are two possible reasons for this: (1) These customers are already referring a large number of customers (or a few customers with large value), and (2) these customers have already exhausted their social network with referrals.

However, in this particular case, we believe that application network exhaustion should not be an issue for several reasons.[9] First, with regard to the financial services industry, there tends to be a high degree of switching behavior between customers and their banks. This switching behavior can arise from (1) changes in the customer's financial situation (e.g., change in job), (2) changes in the customer's debt structure (e.g., mortgage refinance), (3) changes in the customer's geographic location, and (4) changes to take advantage of different product terms (e.g., high interest savings accounts, free checking accounts).

Each of these situations opens up ample opportunities for customers to make referrals to people within their social network. Furthermore, at the time of the study, this particular financial services institution was expanding its offerings at a rate higher than its competitors. This increases the market potential because more prospects view this as an opportunity and may switch to this institution to capitalize on the benefit of consolidating their accounts. Second, the CRV prediction extends for only three years into the future. We expect that most customers have a large enough social network that the time to exhaust the network through referrals is likely to take at least three years—and likely more time. Finally, with the onset of many social networking Web sites (e.g., Facebook, LinkedIn), many consumers have a social network that is actually increasing over time.

The third field study was conducted using the following four steps: (1) customer sampling, (2) customer segmenting, (3) customer targeting, and (4) customer measurement. We discuss each in turn.

Customer sampling. The first step was to draw two random samples of customers from the database of the financial services firm. These samples came from the remaining 13,260 customers from the financial services firm (14,160 – 300 [Study 1] – 600 [Study 2]). The two samples were randomly assigned to a test group and a control group. After we evaluated the sample composition, the test group included 6700 customers, and the control group included 6560 customers. The test group was targeted with the customized marketing campaigns, and the control group received no marketing campaigns. The purpose of assigning the two groups randomly to the test and control cells was to test whether there was a problem with regression to the mean—that is, whether low CLV or CRV scores regress to the mean value However, if the results show that the test group's CLV and/or CRV increases and the control group's does not, this provides evidence that regression to the mean is not producing the effects observed in this field study (Shadish, Cook, and Campbell 2002) and that the campaign caused the increase in CLV and/or CRV

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[9] When a firm observes a decrease in referral behavior by an average customer over time, it is possible to accommodate this in the current framework. For example, it would be possible to model the decay of the referral rate in a sample of customers and apply that rate of decay across the customer base when computing CRV. Consider the following simple example of this: If a customer is making approximately four referrals per period and we observe in the general customer database that, on average, the number of referrals decreases by 50% each period, we could predict two referrals in the next period, one referral in the following, and so forth.

Customer segmenting After calculating the CLV and CRV values for each customer in both the test group and the control group, we again used a median split of the values of CLV (high/low) and CRV (high/low) and placed the customers in the four segments We conducted a test to determine whether the average CLV and CRV scores for customers in each of the matched segments were equal across the test and control groups We found that there was not a significant difference between the CLV and the CRV scores across the test and control groups (see Table 3)

Customer targeting Next, we targeted the customers of the test group with the customized marketing campaign The customers in the three segments with at least one low-scoring metric received different targeted campaign in this study based on which campaign would likely be most effective The three different campaigns were as follows

1 *Targeting low CLV/low CRV* We targeted these customers with bundled offerings for one or more financial services products This was done through personalized communications sent through direct mail and e-mail One offer was a small interest rate reduction on loans if the customer owned multiple products This was to entice the customer to open a new account or transfer an account from another financial institution We followed up with a second direct mail or e-mail piece after two weeks We also returned telephone calls to customers who sought additional information on the offer In all communications, the value of making referrals for new customers was also emphasized by telling them that a $20 incentive would be given to them and to the referred customer *(Objective increase both CLV and CRV)*
2 *Targeting high CLV/low CRV* We targeted these customers with an offering emphasizing the referral incentive for both the current customers and the referred customers We also did this with direct mail and e-mail communications, followed by additional direct mail and e-mail communications after two weeks The main goal of the communications was to emphasize the $20 incentive that both the referring customer and the referred customer would receive *(Objective increase CRV)*
3 *Targeting low CLV/high CRV* These customers received personal communications in the form of direct mail and e-mail pieces that included only an offer for bundling one or more products There was no mention of any referral offer in any of the information these customers received We followed up with additional direct mail and e-mail pieces after two weeks We also returned telephone calls to customers who sought additional information on the offer *(Objective increase CLV)*

Customer measurement At the end of the one-year period (December 2006), we calculated the CLV and the CRV for every customer in the test and control groups We discounted these values to the same period (January 2006) as the initial CLV and CRV measurement, which we calculated before the campaign

Results

At the end of the one-year period, it was clear that each of the three targeted marketing campaigns with the three customer segments had a significant impact on the targeted metric (either CLV or CRV) Evidence of the impact is based on the differences between the pre- and postcampaign CLV/CRV, both discounted to January 2006 The following figures show how the customized marketing campaigns affected each of the three segments in the test We also show how CRV and CLV across all three groups compared with those of the control sample

Panels A and B in Figure 1 show how both the CLV and the CRV of the low-CLV/low-CRV group changed over the period of the marketing campaign For CLV, the average low-CLV/low-CRV customer in the test group had a CLV of $70 before and $120 after, while the average low-CLV/low-CRV customer in the control group had a CLV of $68 before and $68 after The difference between the postcampaign CLV for the test and control groups is significant (t = 289 74, $p <$ 001) For CRV, the average low-CLV/low-CRV customers in the test group had a CRV of $37 before and $85 after, while the average low-CLV/low-CRV customer in the control group had a CRV of $36 before and $37 after The difference between the postcampaign CRV for the test and control groups is significant (t = 392 73, $p <$ 001) In terms of overall gains in dollars, for the test group, the total CLV increased from $103,000 to $177,000 and the CRV from $55,000 to $125,000, while for the control group, the total CLV remained almost unchanged at $103,000 and the CRV only went from $54,000 to $55,000

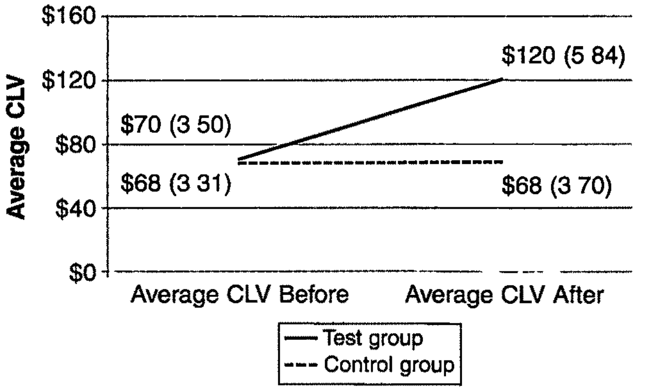
These are dramatic increases, and an explanation is warranted The percentage of people who responded to the offerings in each of the field studies was approximately 5% If we assume that the other 95% in the sample group on average produced no increase in CLV, this would mean that the 5% who responded to the offering must have increased their profit to the firm a significant amount to explain the

TABLE 3
CLV and CRV for the Test and Control Groups

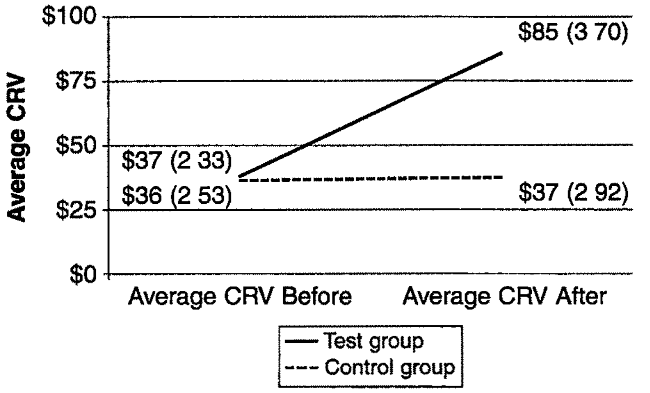
Segment	Test Group (n = 6700) CLV	Test Group (n = 6700) CRV	Control Group (n = 6560) CLV	Control Group (n = 6560) CRV
High CLV/high CRV	$190	$302	$194	$296
High CLV/low CRV	$604	$26	$609	$28
Low CLV/high CRV	$101	$350	$103	$347
Low CLV/low CRV	$70	$37	$68	$36

FIGURE 1
Results for the Low-CLV/Low-CRV Group

A: Results of the Campaign Targeted to Increase CLV



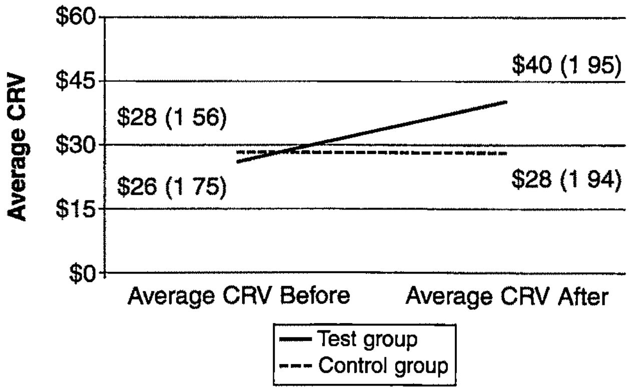
B: Results of the Campaign Targeted to Increase CRV



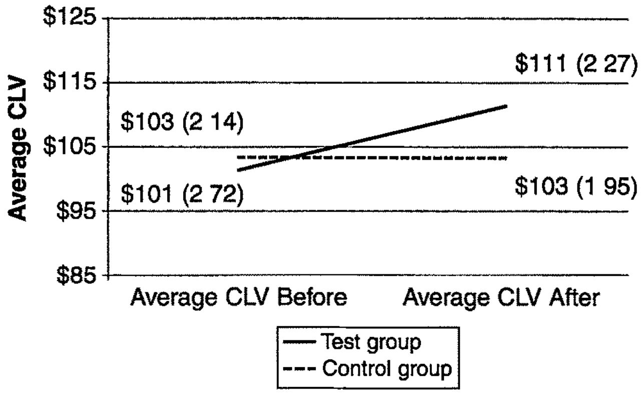
Notes Figure shows the mean value (standard deviation)

FIGURE 2
Results for the High-CLV/Low-CRV and Low-CLV/High-CRV Groups

A: Results of the Campaign Targeted to Increase CRV for the High-CLV/Low-CRV Group



B: Results of the Campaign Targeted to Increase CLV for the Low-CLV/High-CRV Group



Notes Figure shows the mean value (standard deviation)

increase in the overall average For example, in the first case (Figure 1, Panel A), an increase of CLV from $70 to $120 means that the 5% who responded needed to increase their profit to approximately $36 per month for 36 months (or $432 per year for three years) Although this increase in the amount of profit from this group may seem large, in this industry, large increases can easily result when a customer adds a new product (or a few new products) to an existing portfolio of products (see average monthly profits from each product in Table 1)

Figure 2, Panel A, shows how the CRV for the high-CLV/low-CRV group changed from before to after the period of the marketing campaign For CRV, the average high-CLV/low-CRV customers in the test sample had a significant increase in CRV from $26 before to $40 after, while the average high-CLV/low-CRV customer in the control sample had no change in CRV, it was $28 before and $28 after The difference between the postcampaign CRV for the test and control groups is significant (t = 189 60, *p* < 001) For the test group, the total CRV increased significantly from $51,000 to $77,000, while for the control group, the total CRV remained almost unchanged at $52,000

Figure 2, Panel B, shows how the CLV of the low-CLV/high-CRV group changed before to after the period of the marketing campaign For CLV, the average low-CLV/high-CRV customer in the test group had a CLV of $101 before and $111 after, while the average low-CLV/high-CRV customer in the control group had a CLV of $103 before and $103 after The difference between the postcampaign CLV for the test and control groups is significant (t = 104 98, *p* < 001) For the test group, the total CLV increased from $196,000 to $215,000, while the total CLV remained almost unchanged at $196,000 for the control group

Panels A and B in Figure 3 show how the aggregated CLV and CRV across the three targeted segments changed before to after the period of the marketing campaign For CLV, the average across the three segments of the test group customers was $274 before and $291 after The average across the three segments of the control group customers was $270 before and $271 after[10] The difference between the postcampaign CLV for the aggregated test and control

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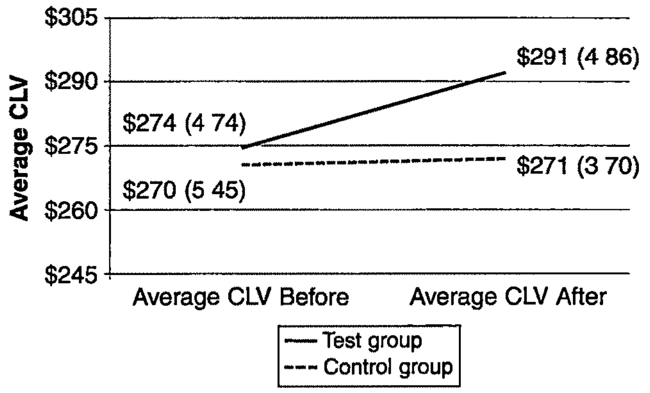
[10] The results for Figure 3, Panels A and B, include customers from the high-CLV/low-CRV, low-CLV/high-CRV, and low-CLV/low-CRV cells

groups is significant (t = 238 80, $p <$ 001) For CRV, the average for customers across the three targeted segments in the test group was $145 before and $164 after The average for customers across the three segments of the control group was $145 before and $146 after The difference between the postcampaign CRV for the aggregated test and control groups is significant (t = 237 80, $p <$ 001) For the aggregated test groups (across the three segments), the total CLV increased from $1 47 million to $1 56 million and the CRV from $785,000 to $882,000, while for the control group, the total CLV remained almost unchanged at $1 42 million, and the CRV only went from $766,000 to $767,000

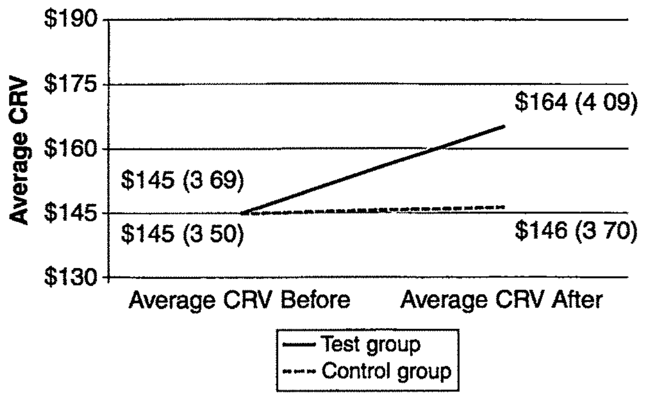
These results show that each of these campaigns was successful in significantly increasing the average customer's CLV, CRV, or both CLV and CRV in each of the test groups However, although the results show that the campaigns worked in generating new profit, we need to determine the return on investment (ROI) to know whether such campaigns are worth the investment (these marketing dollars could have been spent elsewhere in the firm) The discounted costs of carrying out the three campaigns (including direct mail pieces, e-mails, and selected telephone calls for the 5360 customers in the test group[11]), which were implemented twice during the course of the year (once in January 2006 and once in July 2006), were $21,256 This means that the campaign cost was approximately $3 97 per targeted customer The overall profit during the one-year campaign generated from the increase in each customer's CLV and/or CRV across the three campaigns was $216,410 These profits include the cost of the referral incentive in the case of CRV and the discount from bundling products in the case of CLV These incentives were not considered marketing costs in the ROI computation, because they were conditional on a purchase occurring and, in this firm, came out of a different budget They were accounted for by reducing the profit from the item purchased[12] Therefore, ROI can be computed as follows (profit – marketing costs)/marketing costs In this case, the ROI was just over 10 Because this campaign is above the firm's general ROI target for investments, it would be viewed as a success

FIGURE 3
Results Across All Three Targeted Cells (Low CLV/Low CRV, Low CLV/High CRV, and High CLV/Low CRV)

A. CLV Across Three Groups Before and After



B: CRV Across Three Groups Before and After



Notes Figure shows the mean value (standard deviation)

What does this mean for the financial services firm? Should the firm extend this campaign to a larger group of customers from its customer database or to its entire customer base? If we project these gains across 1 million (approximately 7%) of the firm's customer base, we would estimate incremental gains over a one-year period of approximately $19 4 million in CLV and approximately $20 9 million in CRV When we project these gains across the entire customer base of 15 million people, we estimate incremental gains over one year of approximately $291 million in CLV and $314 million in CRV

Although these campaigns were customized for a specific firm in the financial services industry, these findings are consistent in magnitude to those that Kumar, Petersen, and Leone (2007) report for a similar type of campaign conducted by a telecommunications firm Thus, there is evidence across two industries that the success of campaigns targeted to increase referrals can play a key role in new customer acquisition and in generating profits This strengthens the external validity of this study and suggests that these findings can be extended to other firms in industries in which referrals are important for new customer acquisition Although the tactics used to generate the referrals may vary from firm to firm, these findings confirm that firms should be able to harness the power of CRV when implementing referral marketing campaigns

Discussion

The third field study shows the importance of measuring CLV and CRV independently to understand their distinct impact on overall profits As we expected, there was no significant change in CLV or CRV for the control group, which was not exposed to the targeted marketing campaigns, values changed by only approximately $1 per customer However, we observed significant gains in CLV, CRV, or both CLV and CRV due to the targeted marketing campaigns used for the test group This finding is consistent with that from the first two field studies, and given the design of the third study, we are confident that the possibility of regression to the mean as a potential threat to the internal validity is not an issue that biased the results

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[11] Only customers from three of the four segments were contacted, the 1340 customers from the high-CLV/high-CRV cell were not targeted

[12] This is similar to retailers that issue coupons for which the cost of printing and mailing the coupon makes up the marketing cost portion of ROI computation and the cost of the redemption of the coupon is subtracted from the gross margin received from the purchase to generate profit

As we reported previously, we know that all customers who were targeted to increase CRV from the low-CRV segment did not make referrals Only a few customers (approximately 5%) accounted for the significant overall increase in the mean CRV This means that if we can identify an extrinsic motivation (i e , referral incentive) that is appealing to the small set of customers who are most likely to make referrals, managers can more efficiently target only those customers for referral marketing campaigns

Therefore, to better understand the profile of the people who actually made successful referrals, we conducted an exploratory analysis of the differences in the behavioral characteristics (e g , recency or frequency of purchase) of the people giving referrals versus people not giving the referrals To validate and generalize these findings, we ran a fourth field study with a firm in a different industry

Study 4

Purpose

We designed Study 4 to first determine which customers are most likely to provide future referrals before a campaign We accomplish this by using a sample of customers from a retailing firm and relate each customer's predicted CRV (as computed by the four-step approach outlined previously) to a set of behavior variables identified after reviewing the relationship marketing literature We then use the results to run a fourth field experiment that targets only the customers most likely to respond to referral marketing campaigns in a one-year-long field study In this field study, we observe not only the effectiveness of the campaign but also the impact of understanding the drivers of CRV on helping managers target individual customers for referral marketing campaigns

Data

The data used in Study 4 to determine the drivers of CRV were collected from January 1, 2005, to December 31, 2007 (three years) The retailing firm reported the data on a quarterly basis for 40,000 customers The data were collected from those customers during the fourth field study, which occurred over a one-year period following the end of the initial data collection from January 1, 2008, to December 31, 2008 These data included each customer's own purchase behavior, the marketing costs associated with attracting and retaining each customer, the actual referral behavior of each customer, and the transaction data for the customers referred by the original 40,000 customers in the retailing firm sample

Method

Before we conducted this field study, we used the first three years of data to (1) predict each customer's CRV on the basis of the four-step approach described previously and (2) determine empirically the drivers of each customer's predicted CRV (calculated in Step 1) on the basis of the set of observable variables in the firm's customer database[13] After predicting each customer's CRV in Step 1, we needed to identify a set of appropriate variables to use in the drivers model To do this, we reviewed empirical studies in the relationship marketing literature (e g , Venkatesan and Kumar 2004) and identified a list of variables to use as potential observable behavioral predictors of CRV The drivers of CLV that help explain a customer's own purchase behavior are a good place to start when trying to understand a customer's actual referral behavior In addition, we reviewed the word-of-mouth literature for possible predictors of CRV We restrict the list of variables to those that are regularly contained in a firm's customer database We begin by selecting variables from each of the three main categories of relationship marketing variables as they relate to the firm-customer exchange process These include the following

- *Firm-specific factors* These include any actions the firm takes to manage the relationship (e g , marketing communications)
- *Exchange characteristics* These include any observed customer behaviors (e g , purchases, product returns, referral behavior) that help describe the state of the customer's relationship with the firm
- *Customer characteristics* These include any demographic variables (e g , income)

In addition to selecting the linear and quadratic terms for each of the three key categories of relationship marketing variables, we introduce variables that analyze how changes in customer behavior over time affect CRV (e g , change in spending) We describe each variable and provide an expected effect and a rationale for that effect in Table 4

Because CRV is a censored variable, the value can be greater than or equal to 0 We model each customer's CRV as a function of predictor variables using a Bayesian Tobit model (see Equation 3) We chose a Bayesian Tobit model rather than a Heckman two-stage model for the following reason The problem of selection bias can be corrected within a single step of data augmentation (see Tanner and Wong 1987) in a Bayesian framework, and it requires a two-step process in a maximum likelihood approach Chib (1992) provides the details on estimation

$$(3) \qquad CRV_i^* = X_i\beta + \varepsilon_i,\ \varepsilon_i \sim N\left(0,\sigma^2\right),$$

where

$$CRV_i^* = \begin{cases} CRV_i, \text{ if } CRV_i > 0 \\ TN_{[-\infty,0]}\left(\mu_{CRV},\ \sigma^2_{CRV}\right), \text{ if } CRV_i = 0, \end{cases}$$

X_i = a matrix of predictor variables,
β = a vector of parameter estimates, and
ε_i = an error term that is distributed normally

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[13] We use a three-quarter simple moving average to predict the components of CRV We do this because recency of the referral behavior is the best predictor of future referral behavior in the retailing context

TABLE 4
Variables Used as Drivers of CRV

Variable	Operationalization (M) [Variable Name]	Expected Effect	Rationale
Firm-Specific Factors			
Marketing spend	Average spent on marketing per year to customer i from 2005 to 2007 ($42.60 per year) [Avg_Mktg]	∩	Marketing will have a saturation effect on customers, such that too much will cause strain in the relationship (Fournier, Dobscha, and Mick 1997)
Exchange Characteristics			
Monetary value	Average profit per year from customer i from 2005 to 2007 ($182.40 per year) [Avg_MV]	∩	Customers who spend moderately are most likely to have the highest referral value (Kumar, Petersen, and Leone 2007)
Change in monetary value	Difference in previous two quarter's profit: $MV_t - MV_{t-1}$ ($–2.78) [Change_MV]	–	As a customer reduces his or her contribution to a firm's profits through purchases, he or she will likely increase his or her referrals
Frequency	Average interpurchase time of customer i from 2005 to 2007 (1.6 months) [AIT]	∩	Higher (to a threshold) purchase frequency results in more customer interaction with the firm, which will also increase a customer's referrals
Change in frequency	Difference in previous two interpurchase times: $AIT_t - AIT_{t-1}$ (–.16 months) [Change_AIT]	–	Increases in purchase frequency (lower AIT) will increase the interaction of the firm and customer and, in turn, likely increase referrals
Recency	Number of months since previous purchase (3.46) [Recency]	–	The more recent a customer purchase (i.e., the more recent the customer interaction), the more likely a referral will result
Cross-buy	Cumulative number of departments customer i purchased in from 2005 to 2007 (5.8 categories) [Cum_CB]	+	Shopping across more categories will strengthen the relationship and, in turn, is more likely to increase referrals
Multichannel shopping	Cumulative number of channels customer i purchased in from 2005 to 2007 (2.1 channels) [Cum_MC]	+	Shopping across more channels will strengthen the relationship with the firm and, in turn, is more likely to increase referrals
Product returns	Average amount of product returns per year from customer i from 2005 to 2007 ($70.40 per year) [PR]	∩	A moderate number of product returns signals a strong future relationship and a higher number of referrals
Past referral	A binary variable that equals 1 if a customer has made a referral in the past and 0 if no referral has been made (.11) [Referral]	+	Customers who have made referrals in the past are most likely to continue to refer new customers in the future
Customer Characteristics			
Age	Age of customer i in 2007 (39.8) [Age]	N.A.	We include these as covariates in the model merely to control for customer heterogeneity. Thus, we do not provide any hypothesized effects.
Income	Reported income (in thousands of dollars) of customer i in 2007 (56.9) [Income]	N.A.	

Notes: N.A. = not applicable.

We estimate this model using the statistical program R. Using standard protocol, we run 10,000 iterations, with the first 5000 used as burn-in and the remaining 5000 used as posterior.[14]

Estimation Results

We present the parameter estimates along with model fit statistics in Table 5. The parameter estimates from the model provide several key insights into the effect of each variable on a customer's CRV.

Firm-Specific Factors

We find that Avg_Mktg has an inverted U-shaped relationship to CRV, which is consistent with what would be expected—namely, diminishing returns. Therefore, spend-

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[14] We provide the results of two separate null models, along with the full model, in Web Appendix W2 (http://www.marketingpower.com/jmsept10). Model 1 has only a dummy variable for customers who have made past referrals. Model 2 has a dummy variable for customers who have made past referrals and variables that represent marketing cost and marketing cost squared.

TABLE 5
Parameter Estimates and Model Fit for the CRV Model

Variable	M (SD)
Intercept	41 40 (1 28)
Firm-Specific Factors	
Marketing (Avg_Mktg)	512 (086)
Marketing squared (Avg_Mktg^2)	– 196 (042)
Exchange Characteristics	
Monetary value (Avg_MV)	426 (109)
Monetary value squared (Avg_MV^2)	– 094 (046)
Change in monetary value (Change_MV)	– 164 (049)
Frequency (AIT)	238 (032)
Frequency squared (AIT^2)	– 067 (021)
Change in frequency (Change_AIT)	– 201 (056)
Recency (Recency)	– 138 (056)
Cross-buy (Cum_CB)	1 304 (108)
Cross-buy squared (Cum_CB^2)	– 045 (012)
Multichannel shopping (Cum_MC)	1 287 (136)
Multichannel shopping squared (Cum_MC^2)	n s
Product returns (Avg_PR)	1 018 (204)
Product returns squared (Avg_PR^2)	– 029 (005)
Past referral (Referral)	3 281 (736)
Customer Characteristics	
Age (Age)	298 (138)
Age squared (Age^2)	n s
Income (Income)	326 (108)
Income squared (Income^2)	– 019 (007)
Fit	**Value**
Log-likelihood	–53 08
Akaike information criterion	146 16

Notes n s denotes not significant at $p < 10$

ing on marketing has a diminishing return on CRV, which is similar to the effect of marketing spend on CLV (Venkatesan and Kumar 2004) This suggests that it is important to optimize the marketing spend with each customer because a customer can become saturated with too many marketing touches, possibly even negatively affecting the relationship (Fournier, Dobscha, and Mick 1997)

Exchange Characteristics

We find that Avg_MV has an inverted U-shaped relationship to CRV, which is consistent with Kumar, Petersen, and Leone's (2007) findings They find that customers in Deciles 5, 6, and 7, when rank-ordered by CLV, are most likely to have the highest CRV We find that Change_MV has a negative relationship to CRV, which matches our expectation This suggests that as spending with the firm slows, the customer is more likely to translate that loss in purchases into an increase in referrals We found evidence of this phenomenon in several other industries in which referral behavior is encouraged with incentives For example, we spoke with a manager of a major U S airline about referral incentives that help customers attain airline miles for free flights We were told that customers who begin to fly less frequently (i e , lower spend over time) react positively to opportunities to make referrals for mileage that can be used for free flights

We find that AIT has an inverted U-shaped relationship to CRV, which matches our expectation Thus, customers who purchase with moderate frequency are the customers with the highest CRV, similar to the effect of AIT on CLV (Venkatesan and Kumar 2004) When we examine the change in AIT (Change_AIT), we find a negative effect on CRV, which matches our expectation This suggests that while a customer with a moderate AIT has the highest CRV, all else being equal, as the AIT decreases with time, referral behavior tends to increase This indicates that as customers increase their purchase frequency, and likely the strength of their relationship with the firm, they increase their referral behavior An explanation for this finding is that each additional purchase occasion (because of the decrease in the interpurchase time) may act as a trigger for these customers to talk more to their friends and/or relatives

We find that Recency has a negative relationship to CRV This matches our expectation This suggests that the longer the time since the last purchase, the lesser is the strength of the firm–customer relationship, and in turn, the less likely the customer is to make referrals We find that Cum_CB has an inverted U-shaped relationship to CRV, which partially matches our expectation We expected this relationship to be positive However, we find that customers who purchase in several (but not too many) categories are the best candidates for making referrals It is likely that customers who have purchased in several categories have sufficient relationship strength and product knowledge However, it is likely that customers who already purchase in all categories do not perceive value in the referral incentives because they already have purchased a significant amount of products from the company We find that Cum_MC has a strictly positive relationship to CRV, which matches our expectation Thus, customers who buy across more channels are more likely to engage in referral behavior, similar to the effect of multichannel shopping on CLV (Venkatesan, Kumar, and Ravishanker 2007) We find that Avg_PR has an inverted U-shaped relationship to CRV This matches our expectation Thus, customers who return a moderate number of products are more likely to have a stronger future relationship with the firm (Petersen and Kumar 2009) and, in turn, are more likely to engage in referral behavior Finally, we find that Referral has a positive relationship to CRV, which matches our expectation This shows that customers who already have demonstrated that they are able and willing to make referrals are the most likely to continue to make future referrals

Customer Characteristics

Taking into account demographic variables, we find that Age is positively related to CRV, and Income has an inverted U-shaped relationship to CRV This suggests that older customers and customers with moderately high incomes are most likely to engage in referral behavior for this retailing firm Undoubtedly, the results of these variables could vary across firms and industries However, it is important to consider these variables for two reasons (1) It helps explain some of the customer heterogeneity within the firm's customer database, and (2) it helps the firm target the best prospects for acquisition who not only purchase products but also are likely to refer even more customers to the firm

Field Study Purpose and Method

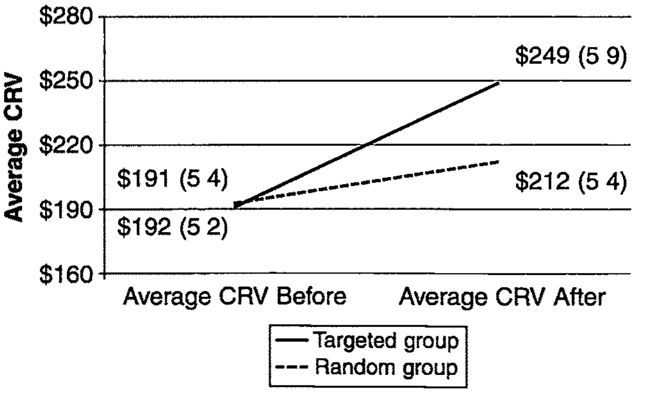
After completing this stage, we conducted a year-long field study with the retailing firm The purpose of this field study was to determine whether we could successfully target individual customers according to their expected referral behavior In the first three field studies, we found that segmenting customers into low- and high-CRV groups and targeting those customers with low CRV was an effective method of increasing profit to the firm through referrals However, it was not the case that all low-CRV customers increased their referral behavior If we can understand the drivers of CRV, we can target only customers in the low-CRV segment who offer the highest potential referral behavior Thus, the purpose of the fourth field study is to investigate whether there is a difference in the impact on a firm's profit through CRV when individual customers are targeted with referral marketing campaigns using the behavioral drivers of CRV versus when low-CRV customers are simply randomly targeted with referral marketing campaigns

We split the 40,000 customers into two equally sized (median split) groups of 20,000 customers according to their CRV scores (i e , high or low) We then randomly split the 20,000 customers in the low-CRV group into two groups, each with 10,000 customers One group served as the targeted group, and the other served as the random group For the targeted group, we used the drivers of CRV to predict which customers would be most responsive to a referral marketing campaign according to past behavior, and we rank-ordered those customers from most to least responsive Then, for the targeted group, we selected 5000 customers (of the 10,000) with the highest potential to make referrals according to their CRV score, and for the random group, we randomly selected 5000 (of the 10,000) customers to include in the referral marketing campaign Over the course of the one-year field study with the retail firm, each of the customers in the two groups (targeted and random) received a direct mail piece (each month), which provided a $20 incentive that would be given to both the customer who makes the referral and the referred customer on purchase We then tracked the referral behavior of the customers in both samples over the course of one year

Field Study Results

We found that knowing the drivers of CRV helped significantly in targeting the right customers for referral marketing campaigns Figure 4 shows evidence of this Before we conducted the field study, the average CRV for the targeted group was approximately $191, and the average CRV for the random group was approximately $192 After the field study, the targeted group increased to $249 (discounted to the beginning of 2008), or approximately 30% The CRV of the control group increased to $212, or approximately 10% The difference between the CRV of the targeted and random groups in the posttreatment period is statistically significant (t = 327 43, $p <$ 001) Note that customers who increased their CRV also on average increased their CLV In other words, the act of providing referrals led to increases in their own purchases, so the firm in effect "hit the jackpot twice"

FIGURE 4
Average CRV Before and After Campaign with Retail Store: Targeted and Random Groups



Notes Figure shows the mean value (standard deviation)

Discussion and Limitations

These results show that targeting low-CRV customers randomly can be beneficial (increase in CRV by approximately 10%) However, understanding exactly which customers in the low-CRV segment who are most likely to respond to referral marketing campaigns can further increase each customer's CRV In this case, the increase was three times greater (30%), or an additional 20% This also does not include the savings from the efficiency gained from the targeting or the prevention of lost customers because of the "harassment factor" In addition, we did not target any customers who were segmented into the high-CRV group because, as an aggregate, the group did not increase their CRV in Study 1 or 2 However, it is likely that there are customers—even if only a small group—in the high-CRV segment who would be responsive to referral marketing campaigns A future field experiment could potentially address this issue

Managerial Implications

This research has several key implications for marketing theory and practice First, we propose a new four-step approach to measure CRV Using data from a financial services firm, we show how to quantify the incremental gain in profits when marketing strategies are managed according to each customer's CRV *and* CLV The findings show that it is important for managers to measure both CRV and CLV separately to better understand their customers and to maximize their profits There are two key advantages of using the process proposed in this article to understand and manage both CLV and CRV

1 Because CRV is a prediction of a referred customer's profitability, simply adding CRV to CLV to derive total customer value, as some researchers have suggested, would only lead to double-counting the contribution Therefore,

summing CLV and CRV yields a measure of total customer equity

2. Managers need to have separate metrics to implement an explicit strategy that targets customers according to their referral behavior or their own transaction behavior Without using these separate metrics (CLV and CRV) to help make decisions about allocating resources, a company may actually ignore customers or provide bad service to those who would offer great returns from referred customers

We were also able to illustrate empirically how to determine a set of behavioral drivers of CRV using data from a retailing firm to target marketing campaigns more efficiently This was demonstrated through a field experiment that showed the following

- Targeting customers from the low-CRV group using the behavioral drivers of CRV significantly increased profits over targeting customers randomly
- Marketing to random customers in the low-CRV group was profitable but not nearly as profitable as targeting customers according to the behavioral drivers of CRV
- Customers who made referrals during the field experiment actually increased their purchases, adding additional profits to the firm

It is clear that in many situations, managers have ignored the customers who have the potential to make referrals These customers may have become "turned off," causing them to feel alienated from the firm and potentially spread negative word of mouth If this happens, these firms can lose future revenue because these customers (1) might stop purchasing and referring customers (Hogan, Lemon, and Libai 2003), (2) might drive away potential prospects who would have joined even without a referral, and (3) could develop negative attitudes toward the firm, leading the acquisition costs of these prospects to increase

There are clear opportunities available for firms to harness the power of CRV One way is to use CRV as a metric for introducing new products by using the referral base of customers Firms that are new entrants to a market can take leadership not just with an innovative product but also by using innovative marketing tools that enable them to harness the power of referrals (Shankar, Carpenter, and Krishnamurthi 1998) Research has shown the value of these referrals through indirect and direct network externalities (Sun, Xie, and Cao 2004), network effects (Godes and Mayzlin 2009, Hogan, Lemon, and Libai 2003, 2004), and a faster diffusion of new products through accelerated purchase behavior (Mahajan, Muller, and Bass 1995)

Another question this research addresses is how a firm might develop a referral program that enables it to maximize profitability across all the customers within the firm One method to enhance the effectiveness of the referral program is to differentiate the value of the referral incentive[15] It is possible to use the behavioral drivers of CRV to customize rewards to the customer level and to strengthen the overall customer relationship (Verhoef 2003) Similar to approaches that manage loyalty program rewards on the basis of each customer's CLV (Kumar and Shah 2004), building referral reward programs based on each customer's CRV can also be straightforward

Building a strong social network can be a long-term competitive advantage for both the customers and the firm because it enables the firm's relationship with each customer to evolve over time (Ganesan 1994) It becomes more difficult for competitors to lure away customers who are tightly locked in to a company's social network At the same time, this benefits customers because a strong social network allows for ease of information sharing about products and the use of common products across a set of customers Thus, a firm should view its customers as skilled resources and work with them to build strong social networks in which both can benefit

Limitations and Suggestions for Further Research

We should point out a few limitations that firms should consider when measuring CRV and implementing marketing programs to increase customer referrals First, measuring CRV is only one method of determining whether a customer can bring a firm new customers and might not be applicable to all firms or industries For example, for many products, their value does not invite rewards for referrals In these instances, managers should consider exploring what drives referral behavior with their customers (as we showed in this study) and determine an appropriate method to measure this referral behavior at a customer level In this situation, managers could target prospects who fit the profile of high-CRV customers currently in their database

Second, not every business has the ability to track referral behavior, and even if they do, they may not have systems in place to do so or a long history of tracking customer referral behavior to estimate the models we recommend For the firms in this study, we were able to use three years of referral behavior history to calibrate the predictions of future referral behavior In other situations, such as the rollout of new products, firms may not have sufficient data to build strong customer insights and therefore would not be able to target customers accurately

Third, the method we suggest for measuring CRV only takes into account the extrinsic motivation of a customer to make referrals (i e , through incentives) and does not try to determine which customers generate referrals through an intrinsic motivation However, there is no reason to expect that the presence of intrinsic motivations would alter the findings pertaining to the effect of extrinsic motivations This could be a worthwhile area for further research

Fourth, the four-step approach for computing and validating CRV worked well in a fairly stable environment (i e , the financial services industry) In this industry, the average customer purchases and holds onto a product (e g , checking account) for a long time In cases in which the market is more turbulent, it may be necessary to use a driver-based approach to compute the four parts of CRV to increase the accuracy of prediction

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[15] For details of the referral program by Bank of America, which differentiates referral amounts to different types of customers, see https //epreferences bankofamerica com/asbs/htm/landing_page/Phase3_Referral_Landing_page html?rc=CRPOE&adlink=000309029c910000a641

Finally, this study does not directly investigate the level or type of reward that should be given to a customer. It is also important to understand what the referral incentive should be when dealing with customers who communicate with prospects in different social networks (Ryu and Feick 2007). Although Ryu and Feick (2007) find that the likelihood of a customer making a referral does not change much given a small or large incentive, it is important to understand the value of the customers when designing the incentives for the referral program. For example, the customers targeted with the referral incentives from the financial services and retailing firms in this study had vastly different customer profiles. Some of the customers were students, some were large family households, and some were small business owners (in the case of the financial services firm). However, in this study, all the customers were targeted with the same incentive level ($20 for referring customer and $20 for referral). Perhaps differentiating the level of referral incentive on the basis of the type of customer is a strategy that can further maximize the gains from a referral marketing campaign. Further research might examine this possibility to help firms maximize their profits. Another potential research idea is to explore the cause behind the "hitting-the-jackpot-twice" phenomenon.

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The Sustainability Liability: Potential Negative Effects of Ethicality on Product Preference

Manufacturers are increasingly producing and promoting sustainable products (i.e., products that have a positive social and/or environmental impact). However, relatively little is known about how product sustainability affects consumers' preferences. The authors propose that sustainability may not always be an asset, even if most consumers care about social and environmental issues. The degree to which sustainability enhances preference depends on the type of benefit consumers most value for the product category in question. In this research, the authors demonstrate that consumers associate higher product ethicality with gentleness-related attributes and lower product ethicality with strength-related attributes. As a consequence of these associations, the positive effect of product sustainability on consumer preferences is reduced when strength-related attributes are valued, sometimes even resulting in preferences for less sustainable product alternatives (i.e., the "sustainability liability"). Conversely, when gentleness-related attributes are valued, sustainability enhances preference. In addition, the authors show that the potential negative impact of sustainability on product preferences can be attenuated using explicit cues about product strength.

Keywords: sustainability, ethical products, green marketing, implicit associations, corporate social responsibility

Products that espouse positive social and environmental ethical principles have received considerable attention in recent years. Stories about "ethical consumers" and terms such as "green" and "sustainable" appear regularly in such popular press outlets as *BusinessWeek* (Beaven 2009), *Time Magazine* (Betts 2009), and the *Wall Street Journal* (Johnson 2009). Companies are responding to this heightened attention with new brand and product introductions (e.g., Clorox's new line of household cleaners, see Story 2008), and retailers (e.g., Wal-Mart, Whole Foods) are responding with comprehensive sustainability initiatives (Gunther 2006; Whole Foods Market 2010).

Despite the widespread attention sustainability is receiving, sales of sustainable products (i.e., products with positive social and/or environmental attributes) still represent "only a small fraction of overall demand" (United Nations Environment Programme 2005, p. 3), and there appears to be a significant gap between consumers' explicit attitudes toward sustainable products and their consumption behavior. For example, one study suggests that though 40% of consumers report that they are willing to buy "green products," only 4% actually do so (United Nations Environment Programme 2005, p. 15).

There are many potential reasons for the relatively low market share of sustainable products. These products often are priced higher than their mainstream counterparts (*Consumer Reports* 2007) and often have relatively limited distribution. However, these factors alone cannot fully explain differences in the success of sustainable products across product categories. Although the market share of sustainable products has been relatively weak in many product categories, such as household cleaning products, it has been relatively strong in other categories, such as personal care products (Porges 2007). This qualified success of sustainable products hints at a variable that is differentially affecting the influence of sustainability on preference.

We propose that though sustainability may be valued in and of itself, it also affects perceptions of a product's other attributes. As such, the extent to which increasing sustainability enhances the product's appeal depends on the type of benefit consumers value in a given product category. Furthermore, we propose that there are some situations in which the benefit of sustainability is offset to such an extent that consumers prefer less sustainable products even though they may care about ethical issues. We also explore a question that

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naturally follows from this proposition What can marketers do to overcome the sustainability liability (when it exists) and, thus, to increase the appeal of sustainable products?

Theory and Hypotheses

Ethical attributes are attributes that reflect moral principles (Baron and Spranca 1997, Ehrich and Irwin 2005, Irwin and Baron 2001, Irwin and Naylor 2009) These attributes are related to a variety of social issues (e g , fair labor practices, humane treatment of animals) and environmental issues (e g , recycling, avoiding pollution) Although prior literature has often referred to "ethical attributes" and "ethical products," the term "sustainable" is commonly used in industry practice Thus, although we draw from a rich literature in ethics to develop our hypotheses, we also use the term "sustainable" to refer to products with positive ethical attributes

There is evidence that consumers view sustainable products positively For example, the findings from a recent survey revealed that most U S consumers indicate that they would choose a product from an environmentally friendly company if it cost the same as other available alternatives (BBMG 2007) Echoing these findings, in another recent survey (Trudel and Cotte 2008), consumers reported being willing to pay a premium for ethically produced goods Thus, ethicality seems to be a benefit for many consumers

Conversely, there is evidence that increasing product ethicality may not always increase preference Although people value ethicality, it may not necessarily follow that they prefer sustainable products For example, researchers have found that improving corporate social responsibility (CSR), which refers to the ways a firm addresses societal and stakeholder obligations (Luo and Bhattacharya 2006), does not always translate into benefits for the company (Luo and Bhattacharya 2006, Sen and Bhattacharya 2001) Although some research (Brown and Dacin 1997) has shown that a favorable CSR record is positively related to overall product evaluation, more recent findings have suggested that a positive CSR record can have a negative effect Specifically, when products are high quality, a positive CSR record can lower purchase intentions (Sen and Bhattacharya 2001), and when firms are perceived as less innovative, CSR can decrease customer satisfaction and financial returns (Luo and Bhattacharya 2006)

This prior literature on CSR has primarily explored how a company's overall CSR record (e g , its record with regard to diversity) interacts with other firm-level attributes (Luo and Bhattacharya 2006) and consumer-level individual difference variables (Sen and Bhattacharya 2001) to influence evaluations of the company's product lines The current research aim is broadly related to this prior research because we also consider the ways ethical superiority might or might not benefit a company

Specifically, we propose that in addition to the benefit of being perceived as a sustainable product, the presence of an ethical attribute can influence consumer perceptions of other valued attributes, which in turn can affect product preference As we review subsequently, one set of extant consumer behavior theories predicts that the presence of a positive ethical attribute could lead to positive perceptions of a product's other attributes, and another set of theories predicts that these perceptions could be negative

Prior Research Predicting a Positive or Negative Effect of Ethicality on Product Preference

When a product includes a positive attribute, this positivity often extends to other product attributes Research on halo effects (e g , Asch 1946, Nisbett and Wilson 1977, Thorndike 1920), the affect heuristic (Finucane et al 2000), and schema-consistent judgments (e g , Fiske and Pavelchak 1986) suggests that if a product is judged to be superior on one observable attribute, it will also be perceived favorably along other attribute dimensions This prior research implies that if ethical superiority is valued, other attributes of sustainable products will be viewed more positively as well

However, other research streams suggest that the presence of a desirable attribute can have a negative effect on the perception of other product attributes Consumers are aware that manufacturers operate under budgetary, product development, and manufacturing constraints Given the behavioral implications of efficient markets (Chernev and Carpenter 2001), consumers may infer that products that are superior on one attribute will be relatively inferior on other attributes This prior research implies that the presence of a positive ethical attribute would result in the expectation of decreased performance on other attributes

Halo effects and beliefs about the trade-offs required in efficient markets would imply a unidirectional effect of ethicality on product preference (i e , sustainable products would be preferred if halo effects prevailed and not preferred if beliefs about trade-offs in efficient markets prevailed) We propose a new factor that also influences consumers' preferences for sustainable products but results in a more complex relationship between sustainability and preference—namely, the type of benefit sought from the product We argue that ethicality is positively associated with some types of benefits and negatively associated with other types of benefits

The Positive Association Between Ethicality and Gentleness (Versus Strength)

In a 2001 nationwide survey of 1037 U S households, consumers indicated that they associate a socially conscious company with attributes such as "safe," "friendly," and "protective" (Gildea 2001) More recently, we asked 23 MBA survey respondents to list attributes on which ethical products might be assumed to have better performance than less ethical products Almost half the respondents (11/23) listed attributes consistent with the idea that products with positive ethical attributes might be safer, healthier, and gentler than other products (e g , [ethical products are] "safer for you and your family," "better for you," and "more gentle on a person's body") This exploratory research suggests that consumers associate ethicality with gentleness-related attributes

These findings are consistent with research in organizational behavior and human relations (e g , Kanov et al 2004, Luthans and Youssef 2007, O'Donohoe and Turley

2006, Sisodia, Sheth, and Wolfe 2007), which has attempted to map the network of traits associated with ethical and morally upright behavior This work shows that a defining characteristic of ethical agents, such as ethical leaders and managers, is compassion and caring (Luthans and Youssef 2007, Sisodia, Sheth, and Wolfe 2007) Because compassion involves being able not only to notice the pain of another but also even to feel this pain (Kanov et al 2004), ethicality carries with it an association of being "gentle" and perhaps even "weak", conversely, a lack of ethicality is associated with being especially concerned with "getting the job done," even if it comes at a cost to others

Indeed, a prevalence of sociocultural messages suggests a conflict between ethicality and strength Sociocultural messages can exert a powerful influence on behavior (Raghunathan, Naylor, and Hoyer 2006) through lay beliefs (Morris, Menon, and Ames 2001), linking concepts that, over time, become automatically commingled in the minds of members of the culture (Gini 2006)[1] Common expressions such as "nice guys finish last" and "to make an omelet, you have to break some eggs" imply that amorality is positively related to strength and success In his book *Why It's Hard to Be Good*, Al Gini (2006) expands on this notion and notes that the "rugged individualist" is one of the most enduring icons in North American culture—the amoral pirate, cowboy, gangster, or other type of rogue who ignores ethical rules and who is macho and tough

We argue that the positive association between ethicality and gentleness and the negative association between ethicality and strength is transferred from the context of social judgments to the context of product judgments This transference is especially relevant in the case of sustainability because consumers may not have perfect information about how strong or gentle a sustainable product is or how sustainability might affect the product's performance, and thus they infer these effects using prior experiences and knowledge (for a discussion of consumer inference making, see Dick, Chakravarti, and Biehal 1990, Sujan and Dekleva 1987) Lay theories about the relationship between missing and available product attribute information are a common way for consumers to form inferences when making product judgments (Broniarczyk and Alba 1994, Raghunathan, Naylor, and Hoyer 2006) In the current research, because of consumers' associations with the relationship between ethicality and strength/gentleness, they assume that products can be either ethical or strong, but not both

Documenting evidence in support of the proposed relationship between ethicality and gentleness/strength not only is theoretically worthwhile but also has important practical implications Gentleness-related and strength-related attributes are valued in many product categories[2] For example, consumers are especially likely to value gentleness in categories such as baby shampoo, facial soaps, and body lotion, and they are especially likely to value strength in categories such as laundry detergents, hand sanitizers, and car tires We propose that associations with ethicality will differentially drive preference for sustainable products, depending on the primary benefit sought in the product category Thus

H_1 Consumers associate higher (versus lower) ethicality with gentleness-related attributes and lower (versus higher) ethicality with strength-related attributes

H_2 Sustainability enhances product preferences to a greater extent when gentleness-related attributes are valued than when strength-related attributes are valued When strength-related attributes are valued, the benefit of sustainability is attenuated, in some cases even resulting in greater preference for less sustainable products

Overcoming the Sustainability Liability

In product categories in which gentleness-related attributes are valued, we argue that ethicality is an asset and, thus, that sustainability enhances preference for the product In product categories in which strength-related attributes are valued, sustainability could be a liability, as we propose in H_2 Therefore, marketers might logically ask how they can overcome potential negative associations between ethicality and product strength Our prior discussion of the association between ethicality and lack of strength suggests a possible solution Managers may be able to overcome the sustainability liability by providing explicit information about product strength, mitigating consumers' reliance on a default inference about a negative relationship between sustainability and strength Therefore, we propose the following hypothesis

H_3 Sustainability is less of a liability when sustainable products are explicitly portrayed as being strong than when no such strength information is provided

Eliciting Implicit Preference

Before introducing the studies, we note that consumers may be motivated to explicitly express a consistently positive relationship among sustainability, product strength, and product preference in all product categories They may be motivated to do so either to perceive or to present themselves in a more positive light (i e , to respond in a socially desirable manner, Fisher 1993, Paulhus 1984) People seem to be particularly motivated to present themselves as more conscientious and moral than others, thus, the motivation for self-presentation is particularly salient in the context of judging ethicality (Epley et al 2004, Kruger and Gilovich 2004) Historically, researchers interested in eliciting beliefs that consumers may not be willing to articulate explicitly have used indirect techniques of inquiry (Alpert 1971, Blatt 1975, Haire 1950, Hussey and Duncombe 1999) We use two such techniques the implicit association test (IAT) (Greenwald, McGhee, and Schwartz 1998) and a projective technique that involves asking participants to identify which product the "average person" would prefer (for a discussion of similar indirect questioning methods, see Fisher 1993) Projective techniques of this nature do not necessarily give researchers better insight into participants' true attitudes and preferences in every situation, but they are particularly useful in contexts in which respondents may be reluctant to fully express themselves because of concerns about expressing socially undesirable opinions.

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[1] One source of lay beliefs can be lay inferencing (Kelly and Thibaut 1969), consumers may learn to associate ethicality with lack of strength through direct experience with both people and products that are ethical but not strong, and vice versa

[2] Although we chose the terms "gentleness" and "strength," it is best to think of these terms as referring to a cluster of attributes that provide consumers related benefits, such as safety and health and power and durability, respectively

Study 1: Implicit Association Test

In Study 1, we conducted an IAT, an established tool for demonstrating implicit associations between concepts (Greenwald, McGhee, and Schwarz 1998), to demonstrate that consumers associate higher ethicality with gentleness-related attributes and lower ethicality with strength-related attributes (H_1).

Stimuli

We draw stimuli for the IAT from the following four categories: (1) words and phrases describing an ethical company/ the practices of an ethical company ("fair labor practices," "cares about the environment," "sustainable development," "'green' company," "socially responsible"), (2) words and phrases describing a less ethical, self-interested (and potentially exploitative) company ("profit at all costs," "exploitative," "selfish," "self-centered," "short-term goals"), (3) words and phrases associated with gentle products (e.g., "safe product," "mild product," "healthy product," "good for children," "soft product"), and (4) words and phrases associated with strong products (e.g., "powerful product," "tough product," "gets the job done," "harsh product," "effective product").

Participants and Procedure

Forty-two undergraduate students participated in this study for course credit. The task consisted of categorizing stimuli from the four categories as the words/phrases were shown on the middle of their computer screens (category labels were displayed at the top of the screen). In line with established protocol (Greenwald, McGhee, and Schwarz 1998), participants completed seven blocks of trials, five of which were practice blocks. Stimuli from all four categories (self-interested company words/phrases, ethical company words/ phrases, gentle product words/phrases, and strong product words/phrases) were presented for classification in blocks 3, 4, 6, and 7 for a total of 200 trials per participant across these four blocks (for details, see Table 1). There were two critical blocks: block 4, in which the category labels were "Self-Interested Company or Gentle Product" versus "Ethical Company or Strong Product," and block 7, in which the category labels were "Ethical Company or Gentle Product" and "Self-Interested Company or Strong Product." Note that block 4 was the hypothesis-inconsistent condition in which the pairings between ethicality and type of benefit valued were the opposite of our predictions, and block 7 was the hypothesis-consistent condition. An implicit association between higher ethicality and gentleness (and between lower ethicality and strength) would be reflected in faster response latencies when the classification task was consistent (versus inconsistent) with H_1.

Data Preparation

We followed the revised IAT scoring algorithm (Greenwald, Nosek, and Banaji 2003), which resulted in a final sample of 39 participants who satisfied all criteria. Next, we computed two difference scores reflecting the difference in response latencies between the blocks that were consistent with the hypothesis and those that were inconsistent (hypothesis-consistent) – (hypothesis-inconsistent). The first difference score uses critical test blocks 7 and 4, and the second uses practice blocks 6 and 3 (see Table 1). We then divided each difference score by the pooled standard deviation of response latencies for the associated blocks and averaged the quotients. The resultant measure is termed the "IAT D effect" (Greenwald, Nosek, and Banaji 2003).

Results and Discussion

Response times were significantly faster in the hypothesis-consistent than in the hypothesis-inconsistent blocks ($F(1, 38) = 59.60$, $p < .0001$, $D = 1.00$). Mean response time when participants classified stimuli into the hypothesis-consistent categories (i.e., pairing words describing less ethical, self-interested companies with words about product strength) was 1050.62 milliseconds in critical test block 7, compared with 1474.91 milliseconds in the hypothesis-inconsistent (i.e., pairing words describing ethical companies with words about product strength) critical test block 4. Thus, in support of H_1, participants implicitly associate higher ethicality with gentleness-related product attributes and lower ethicality with strength-related product attributes.

TABLE 1
Study 1: Sequence of Trial Blocks in IAT

Block	Number of Trials	Function	Items Assigned to Left-Key Response	Items Assigned to Right-Key Response
1	20	Practice	Self-interested company	Ethical company
2	20	Practice	Gentle product	Strong product
3	20	Practice for critical test block	Self-interested company or gentle product	Ethical company or strong product
4	40	Hypothesis-inconsistent critical test block	Self-interested company or gentle product	Ethical company or strong product
5	40	Practice	Ethical company	Self-interested company
6	20	Practice for critical test block	Ethical company or gentle product	Self-interested company or strong product
7	40	Hypothesis-consistent critical test block	Ethical company or gentle productor	Self-interested company or strong product

Addressing Potential Valence Confound

If gentleness is less positively valenced than strength in a product context, a valence match between ethicality and strength and between self-interest and gentleness could induce the results.[3] To test this possibility, we asked 159 participants to rate the valence of the words/phrases used in the IAT (i.e., "whether it's a good thing or a bad thing if a company/product and/or its practices are described this way"). The average valences for the words/phrases belonging to the "strong" ($M = 6.66$) and "gentle" ($M = 6.65$) categories were not significantly different ($F(1, 158) = .01$, $p = .94$), but as we expected, the words/phrases describing a "self-interested" company were rated as significantly more negative ($M = 3.35$) than the words/phrases in the "ethical" company category ($M = 7.62$, $F(1, 158) = 1172.70$, $p < .0001$). Thus, the results of Study 1 document an association between gentleness and ethicality and between strength and self-interest, and not a valence match. Nevertheless, these results are merely suggestive with respect to product preferences. Study 2 tests actual preference using two related product categories to explore whether ethicality is more of an asset when gentleness-related than when strength-related attributes are valued, as we predict in H_2.

Study 2: Product Preference When Gentleness-Related Versus Strength-Related Attributes Are Valued

The primary objective of Study 2 was to demonstrate that the effect of sustainability on product preferences is moderated by the type of benefit sought in the product category (gentleness versus strength). To accomplish this objective, we used two closely related product categories: baby shampoo and car shampoo. Presumably, both gentleness and strength are important whether washing a car or a child's hair. However, we propose that strength-related attributes are more important for car shampoo and that gentleness-related attributes are more important for baby shampoo. To affirm these expectations, we conducted a pretest.

Pretest

Seventy-six undergraduate students were randomly assigned to one of the two categories and were asked to "rate how important each of the following dimensions/characteristics is to you when you buy car shampoo [baby shampoo]." We used the eight attributes most relevant to these product categories from the IAT (Study 1), as well as the product attribute category labels from the IAT, namely, "strong" and "gentle." A factor analysis of the attribute importance measures revealed two factors (both with eigenvalues above 2.0), Strong and Gentle. We calculated the Strong factor using the average of the measures for the importance of "strong," "powerful," "tough," "effective," and "gets the job done" (Cronbach's $\alpha = .82$). We calculated the Gentle factor using the average of the measures for the importance of "gentle," "safe," "healthy," "a 'good for children' product," and "mild" (Cronbach's $\alpha = .80$). We analyzed relative importance ratings for baby versus car shampoo and found that, as expected, Gentle was more important than Strong for baby shampoo ($M_{\text{difference score for Gentle – Strong}} = 2.40$) and Strong was more important than Gentle for car shampoo ($M_{\text{difference score for Gentle – Strong}} = -1.26$, $F(1, 74) = 127.79$, $p < .0001$).

Stimuli and Procedure

One hundred forty-eight undergraduate students participated in the main study in exchange for extra course credit. Participants indicated their relative preference between two brands that varied in their level of sustainability. We manipulated sustainability using a statement from a hypothetical independent agency, the "Ethical Product Council (EPC)." The EPC "rates similar products based along a variety of proenvironmental and prosocial factors such as sensitivity about pollution and resource usage as well as fair treatment of staff, suppliers, and communities." As Figure 1 shows, although the description of the size, uses, and availability of the shampoos remained constant, we told participants that the two shampoos received different EPC ratings (5 = "average" versus 10 = "superb").

FIGURE 1
Study 2: Manipulation of Sustainability for Baby and Car Shampoos

	Baby Shampoo	
	Brand A	**Brand B**
Size	24 oz. bottle	24 oz. bottle
Uses	Shampooing hair of children under 3 years old	Shampooing hair of children under 3 years old
Availability	Mass merchandisers, specialty baby stores, some grocery stores	Mass merchandisers, specialty baby stores, some grocery stores
EPC rating (see below)	10 (superb)	5 (average)

The Ethical Product Council (EPC) rates similar products based along a variety of proenvironmental and prosocial factors such as sensitivity about pollution and resource usage as well as fair treatment of staff, suppliers, and communities.

	Car Shampoo	
	Brand X	**Brand Y**
Size	24 oz. bottle	24 oz. bottle
Uses	Washing cars and trucks	Washing cars and trucks
Availability	Mass merchandisers, specialty auto stores, some grocery stores	Mass merchandisers, specialty auto stores, some grocery stores
EPC rating (see below)	10 (superb)	5 (average)

The Ethical Product Council (EPC) rates similar products based along a variety of proenvironmental and prosocial factors such as sensitivity about pollution and resource usage as well as fair treatment of staff, suppliers, and communities.

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[3] We thank an anonymous reviewer for this suggestion.

Participants reported their relative preference for the sustainable and the less sustainable brands of car shampoo (intended for "washing cars and trucks") and their relative preference for the sustainable and the less sustainable brands of baby shampoo (intended for shampooing the "hair of children under three years old") We counterbalanced the order of the preference task for the two types of shampoo We also counterbalanced the brand names to be either Brand A and B for the product category that appeared first or Brand X and Y for the product category that appeared second Brand A and X were always on the left-hand side of the computer screen, but we also counterbalanced which of these two brands was the sustainable brand Participants reported their preference for the two brands on a nine-point rating scale anchored by the two brands (e g , "Which of these two shampoos would you choose?" with "definitely Brand A" and "definitely Brand B" as the anchors)

Recall that it is likely that participants are motivated to present themselves in a positive light when ethics are involved (Epley et al 2004, Kruger and Gilovich 2004) To address this possibility, half the participants indicated their own preferences (the Self condition), and the other half provided ratings on behalf of the "average American consumer" (the Other condition) We expected the responses of participants in the Other condition to be more reflective of their true preferences Thus, Study 2 had one within-subjects factor—Shampoo Type (Baby versus Car Shampoo)—and three between-subjects factors—Point of View (Self versus Other), Order of Presentation of Product Categories (Baby Shampoo First versus Car Shampoo First), and Order of Presentation of the Sustainable Brand (Left versus Right)

After the preference task, participants indicated (as a manipulation check for each type of shampoo) which brand was manufactured by a company with higher ethical standards Finally, participants in the Other condition completed another manipulation check to ensure that they had indeed provided ratings based on the average American consumer's beliefs (and not their own)[4]

Results

We converted participants' ratings of the ethical standards of the manufacturing company and their brand preference ratings so that the sustainable brand always anchored the high end of the scale (corresponding to a rating of nine)

Data preparation and manipulation check We removed 5 participants from the Other condition from the sample because they failed the manipulation check, which asked them if their responses were based on what the average American consumer believed[5] Therefore, we had a final usable sample of 143 participants The manipulation of sustainability was successful in that participants correctly identified which baby shampoo brand and which car shampoo brand was produced using higher ethical standards ($M_{\text{baby shampoo}}$ = 8 59 and $M_{\text{car shampoo}}$ = 8 52, both means significantly different from the scale midpoint of five, F(1, 142) = 2965 21, $p <$ 0001, and F(1, 142) = 1573 14, $p <$ 0001, respectively)

Preference results A repeated measures analysis tested the relative preference for the sustainable brand of baby versus car shampoo Point of View (Self versus Other), Order of Presentation of Product Categories (Baby Shampoo First versus Car Shampoo First), and Order of Presentation of the Sustainable Brand (Left versus Right) were between-subjects factors in this analysis There was one main effect of order Participants had greater relative preference for the sustainable brand across both product categories when they were asked about baby shampoo first (F(1, 135) = 6 45, $p <$ 05)[6] There were no other main or interactive effects of either order factor

Consistent with H_2, preference for the sustainable brand of baby shampoo (M = 7 48) was significantly greater than preference for the sustainable brand of car shampoo (M = 6 83), F(1, 135) = 11 91, $p <$ 001) We expected this difference because the pretest results showed that gentleness is more valued in the category of baby (versus car) shampoo We also found a significant main effect of Point of View on preferences (F(1, 135) = 14 59, $p <$ 001), presumably because participants in the Self condition were motivated to express preference for the sustainable brand of shampoo even if they did not actually prefer it As Figure 2 shows, there was a greater preference for the sustainable brands in the Self condition than in the Other condition

The power of the projective technique becomes even more apparent in the significant interaction between Point of View and Shampoo Type (F(1, 135) = 4 50, $p <$ 05) (see Figure 2) Note that in the Self condition, preference was overwhelmingly in favor of the sustainable alternative, spotlight analyses (Irwin and McClelland 2001) reveal that there was no difference in preference for the sustainable baby shampoo versus sustainable car shampoo in the Self condition ($M_{\text{baby shampoo}}$ = 7 73 and $M_{\text{car shampoo}}$ = 7 49, F(1, 135) = 92, $p =$ 34) In the Other condition, in which responses were presumably more aligned with true preferences, the Shampoo Type difference was significant (F(1, 135) = 15 01, $p <$ 001), the average preference for the sustainable baby shampoo (versus the less sustainable baby shampoo) was 7 20, and the average preference for the sustainable car shampoo (versus the less sustainable car shampoo) was 6 13 Thus, when the potential for socially desirable responding is lessened through the use of the projective technique, the preference for the sustainable car shampoo (a

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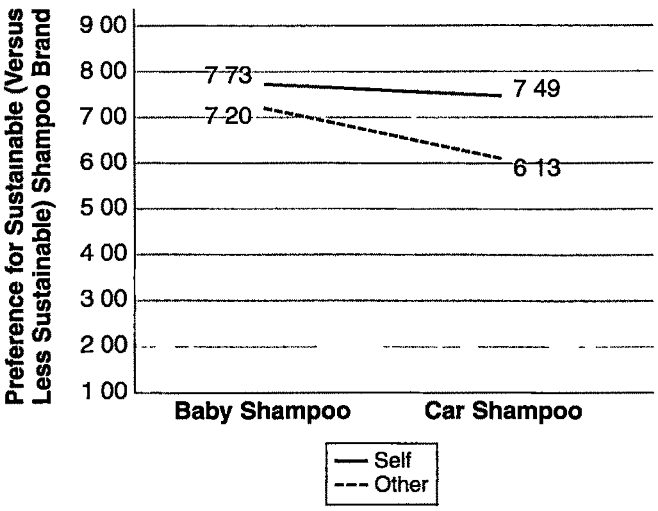
[4] In this and subsequent studies, participants in the Self condition were not subject to a similar manipulation check because we assumed that people would naturally indicate preferences on their own behalf when not instructed otherwise

[5] The results when we retained participants who failed this manipulation check were similar to those when we dropped these participants A significant Shampoo Type main effect (F(1, 140) = 9 35, $p <$ 01), a significant Point of View main effect (F(1, 140) = 12 30, $p <$ 001), and a marginally significant Shampoo Type × Point of View interaction (F(1, 140) = 2 96, $p =$ 09) also emerged in the full data set

[6] This order effect may be due to the idea of babies priming concepts such as care-taking and/or taking a more long-term view about how a person will leave the planet for his or her children This prime may increase participants' relative preference for sustainable brands across both product categories We thank an anonymous reviewer for this suggestion

FIGURE 2
Study 2: The Influence of Point of View on Relative Preference for a Sustainable Versus Less Sustainable Baby Shampoo and Car Shampoo



product category in which strength is valued more than gentleness) is attenuated

Discussion

The results of Study 2 support H_2 Sustainability is more of an asset when gentleness-related attributes are valued more than strength-related attributes By studying relative preferences within two similar product categories, we demonstrated the moderating role of type of benefit sought while minimizing the potential for confounds inherent in cross-category comparisons

What implications do these findings have for marketers? In product categories in which sustainability is an asset, marketers can benefit from promoting the ethical features of their product In product categories in which strength is valued, however, marketers face a potential problem in that the benefits of sustainability can be attenuated, even worse, sustainability could be a liability Study 3 explores whether sustainability can be a liability to such an extent that participants in the Other condition express greater relative preference for a less (versus more) sustainable brand when strength is especially valued

Study 3: Product Preference When Strength-Related Attributes Are Especially Valued

The objective of Study 3 was to provide additional evidence for H_2 in a product category in which strength-related attributes are especially valued To this end, we selected laundry detergent as the product

Pretest

We asked 43 undergraduate students to "rate how important each of the following dimensions/characteristics are to you when you buy laundry detergent" on the same items used in the pretest in Study 2 As we expected, the items loading on the Strong factor (e g , "powerful," "tough") (M = 5 53) were rated as significantly more important than the items loading on the Gentle factor (e g , "safe," "mild") (M = 4 25, F(1, 42) = 34 09, $p <$ 0001)

Stimuli and Procedure

Seventy-six undergraduate students participated in the study in exchange for extra course credit To both the right and the left of the computer monitors where participants were seated during the study lay a folded grey T-shirt Behind each T-shirt was a bottle of laundry detergent in which the respective T-shirt had purportedly been washed In reality, both T-shirts were washed in a third nonscented detergent, so the T-shirt stimuli did not actually differ The detergent placed behind one T-shirt was Seventh Generation, a detergent promoted as a sustainable alternative ("Tough on dirt but gentle on the environment"), and the detergent behind the other T-shirt was Purex, a detergent that makes no claims about sustainability[7] Consistent with Study 2, we employed a Point of View manipulation, participants responded either from their own perspective or from that of the "average person" Thus, the study had a 2 (Point of View Self versus Other) × 2 (Order of Placement of the Detergent Bottles Left versus Right) design Order had no main or interactive effects, and we do not discuss it further

Participants were instructed to inspect both bottles of detergent, including the labels After inspecting the bottles, participants rated their relative familiarity with the brands on a seven-point scale, with 1 anchored by one detergent and 7 anchored by the other detergent, as well as their perceptions of the relative sustainability of the two detergents Finally, using a seven-point scale with the ends anchored by the detergent brand names, participants identified which detergent, if either, they would prefer to use "regardless of cost"

Results and Discussion

As in Study 2, we converted all ratings such that the sustainable brand always anchored the high end of the scale (corresponding to a rating of seven) We removed 8 participants from the Other condition from the sample because they failed the Point of View manipulation check[8] This left a usable sample of 68 participants As a manipulation check, we tested whether participants correctly identified which detergent was more sustainable, and the results show that they did (M = 6 00, significantly different from the scale midpoint of four, F(1, 67) = 113 90, $p <$ 0001) Next, we regressed relative detergent preference on Point of View There was no overall preference for either detergent (M = 3 60, not significantly different from the scale midpoint of four, F(1, 67) = 1 85, $p =$ 18) As we expected, however, there was a significant effect of Point of View on preference (F(1, 66) = 10 27, $p <$ 01) Follow-up analyses using the spotlight method indicated that while participants in the Self condition did not significantly prefer either detergent (M = 4 36, not significantly different from the scale midpoint, F(1, 66) = 99, $p =$ 32), participants in the Other condition expressed a strong preference for the less sustainable detergent (M = 2 59, significantly below the scale midpoint, in support of H_2, F(1, 66) = 11 39, $p <$ 01) Thus, Study 3 demonstrates that when strength is more valued than gentleness, the benefit of sustainability can be attenuated to such a degree that there is greater preference for the less sustainable brand

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[7] *Consumer Reports* (2008) rated Seventh Generation's overall performance as 59 out of 100 points Purex received a somewhat lower score of 47 Note that Seventh Generation's slightly better performance score arguably provides a conservative test of the hypothesis

[8] The results when we retained participants who failed the manipulation check were similar to those when we dropped these participants Specifically, a significant Point of View effect (F(1, 74) = 13 77, $p <$ 001) on preference also emerged in the full data set

Note that though there are obvious advantages to using real brands of detergent, we were concerned that the relative familiarity of Seventh Generation versus Purex induced the results However, there was not a significant relationship between relative preference and rated differences in familiarity with the detergents (F(1, 66) = 2 16, $p =$ 15) and no interactive effect of familiarity and Point of View (F(1, 64) = 66, p = 42), so familiarity cannot underlie the preference results Nonetheless, to more convincingly rule out the possibility that familiarity drives the results, in Study 4, we return to the previous use of fictitious brands to replicate the sustainability liability in an additional product category We also obtain process evidence to demonstrate that the liability is driven by differential perceptions of product strength for products varying in sustainability Study 4 also explores how managers can attenuate the sustainability liability

Study 4: Overcoming the Sustainability Liability with Explicit Information About Product Strength

In this study, we turn our attention to how managers can attenuate the sustainability liability Recall that in H_3, we predicted that sustainability is less of a liability when sustainable products are explicitly portrayed as being strong than when no such information is provided In Study 4, we explore participants' preferences for a sustainable (versus less sustainable) brand of car tire when explicit strength information is either present or absent

Pretest

We performed a pretest to confirm the expectation that people value strength more than gentleness when purchasing automobile tires A total of 75 pretest participants responded to the questions, "How important is it to you that the car tires you buy are strong" and "How important is it to you that the car tires you buy are gentle," both on nine-point scales As we expected, Strong (M = 8 48) was rated as significantly more important than Gentle (M = 2 93, F(1, 74) = 405 98, $p <$ 0001)

Stimuli and Procedure

A total of 311 undergraduate students participated in this study in exchange for extra course credit Given the results of the prior studies, this study includes only a projective condition (i e , Other) To ensure that participants understood the Point of View manipulation, we presented them with a similar manipulation check item to that used in the prior studies Participants were told that they would be participating in a study on car tires and that car tires differ on two major attributes

- **The materials from which they are made:**
  All car tires are made from oil and rubber Traditionally, car tires have been made using methods and materials that are not very sustainable There are car tires on the market today, termed "eco-tires," that are made using sustainable methods and materials, such as using recycled rubber (recycled from a number of sources) and alternative plant-derived ingredients[9]
- **The guarantee that the manufacturer of the car tires makes to consumers·**
  Guaranteed STRONG or Guaranteed AVAILABLE IN YOUR AREA

Participants were shown the four possible combinations of these two attributes 2 (Sustainability sustainable versus less sustainable) × 2 (Guarantee Type strength versus "available in your area" [the control condition]) Participants were then asked to rate a hypothetical brand of car tires (called "Brand A"), the description of which we manipulated between subjects to be a sustainable tire brand with a strength guarantee, a sustainable tire brand with an availability guarantee, a less sustainable tire brand with a strength guarantee, or a less sustainable tire brand with an availability guarantee (for details, see Figure 3) Partici-

FIGURE 3
Study 4: Descriptions of Car Tire Manipulated Between Subjects

Sustainable Brand with Strength Guarantee: •CAR ECO-TIRE Made using sustainable methods and materials, such as recycled rubber and alternative plant-derived ingredients •Guaranteed STRONG	**Sustainable Brand with Availability Guarantee:** •CAR ECO-TIRE Made using sustainable methods and materials, such as recycled rubber and alternative plant-derived ingredients •Guaranteed AVAILABLE IN YOUR AREA
Less Sustainable Brand with Strength Guarantee: •CAR TIRE Made using traditional methods and materials, including non-recycled rubber and other ingredients traditionally used by car tire manufacturers •Guaranteed STRONG	**Less Sustainable Brand with Availability Guarantee** •CAR TIRE Made using traditional methods and materials, including non-recycled rubber and other ingredients traditionally used by car tire manufacturers •Guaranteed AVAILABLE IN YOUR AREA

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[9] Note that this type of "eco-tire" is available in the U S market today

pants responded to the question, "How durable would the average American think Brand A car tires are?" on a scale ranging from 1 ("not at all durable") to 9 ("very durable") and to the question, "How long-lasting would the average American think Brand A car tires are?" on a scale ranging from 1 ("not at all long-lasting") to 9 ("very long-lasting").

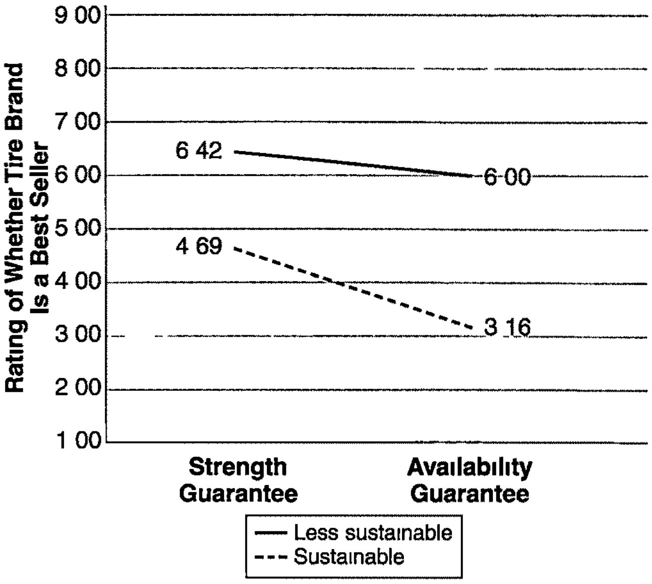
Participants then read the following instructions: "For the rest of today's questions, please tell us what you personally think. This can be the same or different from what you thought the average American would think." The purpose of changing participants' Point of View at this point in the study was to employ a slightly different dependent variable. Rather than asking participants to indicate relative preference between a more sustainable and a less sustainable brand, as we had done in prior studies, we asked them to respond to the question, "Do you personally (not the average American) think Brand A car tires are a best-selling brand in the U.S. today?" on a scale ranging from 1 ("no, definitely not") to 9 ("yes, definitely"). Note that this technique is still a projective technique in that participants are indicating which type of tires they believe others would purchase, but this measure more directly assesses participants' thoughts about others' choices than relative preference. Finally, using the same scale, we asked participants, "Do you personally think that the guarantee offered by Brand A car tires is believable?"

Results

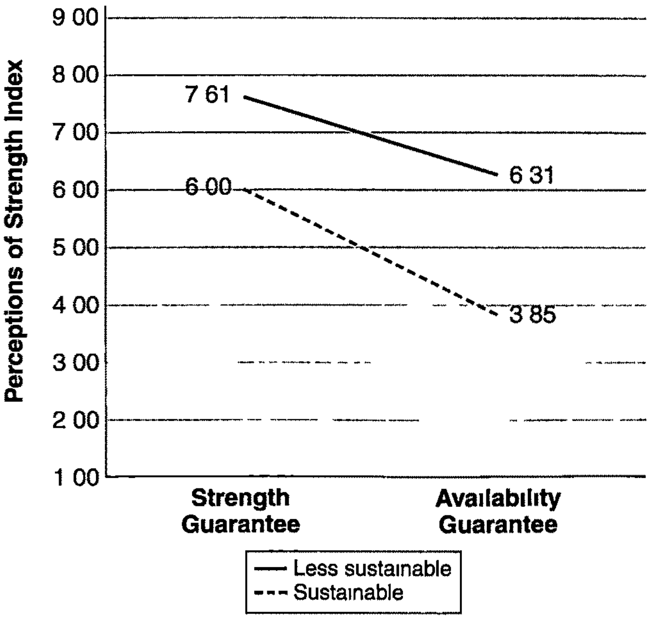
We removed 30 participants from the sample because they failed the Point of View manipulation check.[10] This left a usable sample of 281 participants. To test H_3, we subjected the best-seller dependent variable to a 2 (Sustainability: sustainable versus less sustainable) × 2 (Guarantee Type: strength versus availability) analysis of variance. Both main effects were significant; participants reported that less sustainable tires ($M = 6.21$) would sell better than the sustainable tires ($M = 3.92$, $F(1, 277) = 58.76$, $p < .0001$), and they reported that tires associated with the strength guarantee ($M = 5.55$) would sell better than tires associated with the availability guarantee ($M = 4.58$, $F(1, 277) = 10.70$, $p < .01$). Most important, the Sustainability × Guarantee Type interaction was significant ($F(1, 277) = 3.50$, $p = .06$). Follow-up spotlight analyses revealed that type of guarantee did not have a significant effect in the less sustainable tire condition ($F(1, 277) = .95$, $p = .33$). However, participants who saw a sustainable tire with a strength guarantee indicated that the tire was significantly more likely to be a best seller than participants who saw a sustainable tire with an availability guarantee ($F(1, 277) = 3.69$, $p < .001$). The pattern of the interaction demonstrates that the negative impact of sustainability can be attenuated if a sustainable product is accompanied by explicit information about product strength (for details, see Figure 4, Panel A).

FIGURE 4
Study 4: Beliefs About Car Tire Brand by Sustainability and Guarantee Type

A: Participants' Beliefs About Whether Car Tire Brand Is a Best Seller in the United States Today by Sustainability and Guarantee Type



B. Participants' Beliefs About Whether the Average American Would Perceive the Car Tire Brand as Strong by Sustainability and Guarantee Type



To demonstrate that the interactive effect of Sustainability and Guarantee Type on perceptions that the tire is a best seller is not driven by differences in the believability of the guarantee, we next ran a 2 (Sustainability) × 2 (Guarantee Type) analysis of variance using believability as the dependent measure. There was no interactive effect of Sustainability and Guarantee Type on believability ($F(1, 277) =$

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[10] The results when we retained participants who failed the manipulation check were similar to those when we dropped these participants. Specifically, a significant Sustainability × Guarantee Type interaction predicting participants' perceptions of whether the car tire was a best seller also emerged in the full data set ($F(1, 307) = 3.50$, $p = .06$).

$.18$, $p = .67$). Thus, believability does not drive the focal interaction. However, according to our theory, the differences in the best-seller dependent variable should be driven by perceptions of the durability of the tire and perceptions of how long the tire would last, that is, the strength of the tire.

The ratings of durability and long-lastingness were highly correlated ($r = .83$), and thus we first averaged them to form a "perceptions of strength" index. As we expected, both Guarantee Type and Sustainability significantly influenced perceptions of strength, with respondents indicating that the average American would think that the less sustainable tire was stronger ($M = 6.96$) than the sustainable tire ($M = 4.92$, $F(1, 277) = 123.17$, $p < .001$) and that the tire with the strength guarantee ($M = 6.08$) was stronger than the tire with the availability guarantee ($M = 5.08$, $F(1, 277) = 88.26$, $p < .001$). Most important, the Sustainability × Guarantee Type interaction was also significant ($F(1, 277) = 5.45$, $p < .05$). The effect of Guarantee Type was greater in the sustainable condition ($F(1, 277) = 70.52$, $p < .0001$) than in the less sustainable condition ($F(1, 277) = 24.33$, $p < .0001$). Because participants believe that a sustainable product is not as strong, in general, as a less sustainable product, the addition of an explicit guarantee of strength has an even more powerful effect on perceptions of strength for sustainable products (for details, see Figure 4, Panel B).

Finally, we tested whether perceptions of strength mediated the interactive effect of Sustainability and Guarantee Type on the best-seller dependent variable (Baron and Kenny 1986). Indeed, when we include the perceptions of strength index in the model, the interaction term is no longer a significant predictor of participants' beliefs about whether the car tire is a best seller ($F(1, 276) = .83$, $p = .36$, Sobel $Z = 2.22$, $p < .05$).

Discussion

The results of Study 4 support H_3, the sustainability liability observed when no explicit information is provided about product strength is attenuated when consumers are reassured that the sustainable product is strong. Note that by manipulating information about product strength, we are examining the psychological mechanism we propose by manipulating this process (i.e., manipulating perceptions of product strength) to moderate the relationship between sustainability and product preference (for a discussion of this technique, see Spencer, Zanna, and Fong 2005). Thus, Study 4 provides both indirect process evidence and direct process evidence (through mediation analysis) that the sustainability liability is indeed due to consumers' perceptions that sustainable products are not as strong as less sustainable products. Study 4 is also substantively important in that it suggests a way for managers of sustainable brands to combat the sustainability liability through explicit information about product strength. In Study 5, we focus further on the substantive implications of this research by demonstrating that the sustainability liability affects consumers' choices outside the lab.

Study 5: Observational Field Study

Because we conducted Studies 1–4 in controlled laboratory environments using projective techniques, managers of sustainable products could question whether the sustainability liability affects consumers' decision making in a real consumption context. Therefore, in Study 5, we elicit actual consumer choices in a context with potentially significant consequences: the choice of a liquid hand sanitizer designed to kill bacteria and viruses. With the threat of contracting the H1N1 virus (i.e., swine flu) being highly salient at the time we conducted the study, strength, specifically the ability to kill the H1N1 virus, is an important attribute in this product category.[11] Thus, we expected people to prefer to use a less sustainable hand sanitizer over a sustainable hand sanitizer.

Stimuli and Procedure

A small table was placed near one of the entrances to the cafeteria of the business school at a large state university. Two (8-ounce) hand sanitizer bottles were displayed on the table, both variants of a relatively unknown private-label brand (Target's "up & up" brand). The sanitizing liquid in one of the bottles was green, and that in the other bottle was clear. A sign behind the bottle with the green sanitizer read, "Up & Up Green (Eco Friendly)," and a sign behind the bottle with the clear sanitizer read, "Up & Up White (Regular)." Thus, the bottle with the green sanitizing liquid was presented as a sustainable alternative (in reality, neither version actually makes claims about sustainability). Finally, to increase the realism of why a hand sanitizer station was being set up, a 24 × 36-inch poster, which read, "Swine Flu Alert: Use Hand Sanitizers as Often as Possible," was placed on the table.

A confederate observed and recorded use of the two hand sanitizers. For approximately half the duration of the study, the confederate sat close to the hand sanitizer station with an open laptop. The confederate was close enough to the table for those who used a hand sanitizer to realize that their choices were being observed and recorded. For the remainder of the time, the confederate was positioned such that people using a hand sanitizer were not aware their choices were being recorded (the confederate sat behind a pillar at some distance from the table and observed the hand sanitizer choices surreptitiously). We also manipulated the position of the hand sanitizers so that the green hand sanitizer was on the right-hand side of the table for half the duration of the study and on the left-hand side of the table for the other half. The position of the hand sanitizer had no main or interactive effects on choice of hand sanitizer, and we do not discuss it further. A total of 51 participants were observed using one of the hand sanitizers during an 11-hour period (approximately 5 hours with the confederate in an easily observable position and 6 hours with the confederate hidden).

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[11] The study was conducted during October 2009 when fear about swine flu was high. Just before this study was conducted, the dean's office (at the school in which the study was conducted) had sent out an e-mail alert informing students and employees about the risk of swine flu and recommending the use of hand sanitizers to mitigate the chances of contracting the H1N1 virus.

Results and Discussion

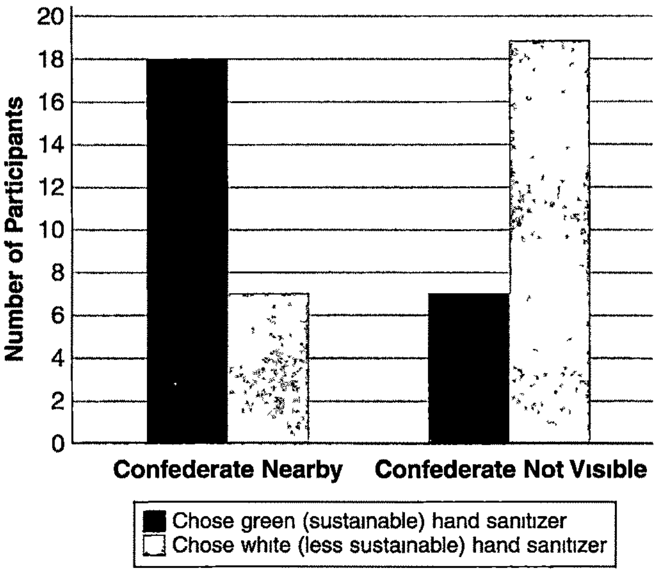
Though not precluded from doing so, none of the participants chose to use both hand sanitizers; each participant selected either the sustainable (green) hand sanitizer or the less sustainable (white) hand sanitizer. A logistic regression showed a significant relationship between type of hand sanitizer chosen and confederate proximity ($\chi^2(1, 50) = 9.58$, $p < .01$). Figure 5 presents these results. Follow-up spotlight analyses revealed that when the confederate was nearby, a significant proportion of participants chose the green (versus white) hand sanitizer (72% versus 28%, $\chi^2(1, 50) = 4.50$, $p < .05$). However, when the confederate was not visible, a significant proportion of participants chose the white (versus green) hand sanitizer (73% versus 27%, $\chi^2(1, 50) = 5.19$, $p < .01$).

Thus, in a nonlaboratory decision with actual choices, Study 5 shows that sustainability is a liability for product choice when strength is especially valued. It also shows that people are not as likely to reveal this preference when they know that their choices are being observed, providing additional evidence for the contention that projective techniques (which allow respondents to reveal their choices without feeling personally observed) are useful in revealing actual preference in the domain of ethical decision making.

General Discussion

Growing concerns about a variety of social and environmental issues may be ushering in an era in which concern about sustainability crosses the chasm (Moore 1991) from a fringe movement espoused by a niche of consumers to a broader trend that influences the consumption patterns of the mainstream market. Issues such as global warming and resource usage present real threats that society must confront, and they also present significant opportunities for marketers. Companies that successfully respond to these threats by developing and promoting products that appeal to consumers' ethical values can benefit society while fulfilling company objectives of achieving long-term profitable growth.

FIGURE 5
Study 5: Participants' Choice of Hand Sanitizer (Sustainable Versus Less Sustainable) by Confederate Position (Nearby Versus Not Visible)



With these evolving opportunities, however, come real challenges. The goal of this research was to demonstrate that product sustainability, though appealing as a virtue on its own, can be either a liability or an asset with respect to consumer preferences and choice. The effect of sustainability on preference is not uniformly positive (or negative), because the presence of sustainability affects consumers' judgments about other product attributes.

Theoretical Contributions

The findings advance the understanding of the effect of sustainability on consumer decisions in several ways. First, we document consumers' associations between superior ethicality and gentleness-related attributes and between lower ethicality and strength-related attributes (Study 1). To the best of our knowledge, this research is the first empirical demonstration of these associations.

Second, we show that whether sustainability is an asset depends on the type of benefit valued in the product category (Studies 2–5). In Studies 3–5, we demonstrate that sustainability is a liability (with respect to product preference) across three different product categories in which strength is valued: laundry detergent, automobile tires, and liquid hand sanitizer. The results from these studies suggest that when ethics are involved, consumer judgments are not explained by unidirectional processes identified in prior literature, such as halo effects (Asch 1946; Nisbett and Wilson 1977; Thorndike 1920) or the simple trading off of attribute performance assumed under market efficiency (Chernev and Carpenter 2001), because sustainability does not uniformly increase either negative or positive response to products.

This research also supports recent findings exploring the impact of CSR on product evaluations. The CSR literature initially focused on the positive impact of CSR initiatives on product and company evaluations (Brown and Dacin 1997). More recent research in this area has presented a more nuanced approach similar in spirit to our theorizing, in that it has focused on identifying specific circumstances under which CSR might or might not lead to uniformly positive product evaluations (Luo and Bhattacharya 2006; Sen and Bhattacharya 2001). Note that this prior research and the current findings do not suggest that companies should not strive to be ethical. However, taken together, these research streams suggest that the effect of ethicality on a host of important variables, including purchase intention, satisfaction, and product preference, is complex.

Finally, we show that consumers' negative expectations of sustainable products can be mitigated. Study 4 demonstrates that when ethical attributes are present, explicit information about product strength is particularly important This information can be used to reassure consumers that sustainable products also perform well, even in categories in which strength is especially valued Thus, the findings contribute to the literature on the interplay between lay beliefs and inference making (Broniarczyk and Alba 1994, Raghunathan, Naylor, and Hoyer 2006), demonstrating that consumers do not rely on lay theories when explicit information about missing attributes is provided

Practical Implications

Given the relative success of some categories and brands of sustainable products, the industry trend toward more product sustainability appears to be well founded However, this research provides some insight into the challenges that companies face as they introduce more sustainable product alternatives, as well as guidance on what they can do to address these challenges

Market research to determine the potential demand for sustainable products may lead decision makers to believe that a large segment of consumers will purchase sustainable products only to find that, depending on the product category and promotion strategy, sales of these products fall far below expectations Although traditional research methods may be appropriate for some product categories, companies may want to consider indirect ways of assessing the potential demand for sustainable products, such as the manipulation of the point of view from which respondents are asked to answer purchase intention questions Given the difference in the results when social desirability concerns are mitigated compared with when they are not, this research suggests that projective techniques are important for both practitioners and academics who want to study consumer decision making when sustainability is involved

This research also provides some guidance for companies that choose either to include ethical attributes in new products or to capitalize on sustainable products already in their portfolios For product categories in which strength-related attributes are valued, companies promoting sustainable products may need to pay special attention to countering the association between sustainability and lower product strength For example, as the findings from Study 4 indicate, companies might explicitly promote the strength of these products in addition to their sustainability This can be accomplished by modifying the traditional marketing-mix elements, including information provided in promotions, on packaging, and so forth Brand names might also be used as explicit strength cues Companies interested in producing sustainable products in categories in which strength is valued should consider cobranding with brands already associated with strength The relatively recent introduction of Clorox's Green Works is an example of this type of branding strategy employed to introduce a new sustainable product line Note that Clorox (2010) also gives explicit strength cues in describing the effectiveness of its products (e g , "Green Works® natural laundry detergent still cleans with the power you expect from the people at Clorox")

In addition, given the finding that consumers judge sustainable products to have superior performance in terms of gentleness-related attributes (e g , safety, healthfulness), marketers should consider pursuing brand and product line expansion strategies that benefit the most from association with these product attributes Indeed, some brands already appear to take advantage of the sustainability–gentleness relationship Burt's Bees, acquired in 2007 by Colgate for almost $1 billion, specializes in natural personal care products, including children's products and products for pregnant women The Burt's Bees (2010) product line emphasizes gentleness as well as ethics and sustainability (e g , "Make bath time naturally healthy with these formulas that gently cleanse and soften baby's skin") and has proved to be successful

Limitations and Further Research

We believe that our results will generalize to many other product categories in which strength or gentleness are valued, but the results will not necessarily apply in product categories in which neither of these two attributes is an important determinant of product choice In addition, when we conceptualize "strength" and "gentleness," we refer to these attributes in a physical sense We do not expect a similar inference about strong-tasting or strong-smelling food, for example, because the lay theory that we propose consumers hold is specific to an inverse relationship between ethicality and physical strength In product categories in which product choice is determined by non-strength-related attributes, the degree to which ethicality increases preference depends on the specific relationship between ethicality and the attribute driving product choice For example, sustainable brands may be viewed as more homegrown and simple than less sustainable brands Less sustainable products may be considered more sophisticated and sexy than sustainable products The interaction of ethicality with other types of benefits sought from the product is an important area for further research

Further research can also address situations in which the sustainability liability will not be observed even in product categories for which strength is especially valued Study 5 suggests that whether a product is consumed in public or in private will affect whether consumers are reluctant to choose a sustainable brand In highly observable contexts, consumers may be more rather than less likely to choose sustainable brands because of social desirability concerns (i e , either to avoid appearing as if they do not care about ethical issues or to publicly demonstrate their commitment to a particular ethical cause)

Finally, the results suggest that the associations between superior ethicality and gentleness and between lack of ethicality and strength will extend beyond a product context For example, ethical service providers (e g , attorneys) may be viewed as less able to provide effective service (e g , less aggressive representation of their clients) than their less ethical counterparts These associations may also extend to perceptions of corporations as a whole, such that ethical corporations may be viewed as less strong and less powerful overall than less ethical corporations We leave these as possibilities for further research to address

Conclusion

Many of the environmental and social problems that people report caring about could be at least partially corrected if marketplace behavior reflected deeply held values Sometimes people say that they hold values that, in reality, they do not, but we propose that other mechanisms may also underlie the discrepancy between reported values and actual consumption behavior We show in this research that though sustainability can be a marketing asset in categories in which gentleness is especially valued, it can be a liability in categories in which strength is especially valued Fortunately, as this research demonstrates, it is likely that companies can overcome the sustainability liability with an appropriate positioning and promotion strategy This knowledge should improve the odds of success for companies interested in marketing sustainable products and should support many consumers' desires to better align their values and their consumption behavior

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Flora F. Gu, Namwoon Kim, David K. Tse, & Danny T. Wang

Managing Distributors' Changing Motivations over the Course of a Joint Sales Program

Ensuring joint program participation by distributors is essential to channel management. Although studies confirm that firms can promote distributor participation by attending to their participation motivations, the authors argue that distributors may change their motivations over the course of a joint program, driven by an increase of program-related information and how their peer distributors behave. Drawing insights from the information asymmetry literature, the authors postulate that distributors' *ex ante* commitment is driven by their motivation to avoid losses, and after they participate, their *ex post* adaptation reflects rent-seeking motivations. This study also examines how the participation of peer distributors operates as an information signal that moderates the motivation–participation link for the focal distributor. In the context of an actual sales program, this study confirms the postulate of motivation shift and the salience of network-based information in distributors' program participation. The results show that a manufacturer needs to manage its distributors' participation in a discriminant, process-oriented, and system-sensitive manner by addressing the latter's diverse motivations, changing goals in the joint program, and influences from peer distributors.

Keywords: marketing channel, information asymmetry, program participation, risk-avoidance motivation, rent-seeking motivation

Gaining distributor participation in joint sales programs, such as point-of-purchase displays, seasonal promotions, and new product launches, remains a core issue for managing channels in the increasingly competitive and dynamic marketplace (Jap 1999; Kaufman, Jayachandran, and Rose 2006; Murry and Heide 1998). To understand and encourage such participation, seminal studies have focused on characteristics of the distributor–manufacturer dyad, including its complementary resources and capabilities (Jap 1999, 2001), interpersonal relationships (Heide and Wathne 2006), and the need to minimize transaction costs (Buvik and John 2000; Heide and John 1990).

Recent work has pointed out that distributors may have different motivations and that such motivations may shift before the start of the program and after the program is in place (Jap and Anderson 2007; Murry and Heide 1998). This is common in firm practices. For example, when Complan, a small dietary spin-off brand of Heinz, launched a sales program, it relied on financial incentives to encourage distributor participation. Yet the firm later found out that the real catalyst of distributors' participation was not financial benefits but rather their perceived exigency (Montgomery 2005). In China, Ford Motor Company started a joint sales program with Xinbaoding, one of its regional distributors. The latter's initial motive was to leverage the program and build a stable distributorship. However, when Ford failed to provide proper financial incentives, the partnership dissolved, hurting Ford's reputation in the country (*China Economic News* 2006). We are intrigued by the diversity and shifts in distributor motivations; therefore, this study attempts to delineate the theoretical roots and verify the salience of this phenomenon. The findings add to the understanding of how firms can manage their distributor participation discretely and effectively (Frazier 1999; Murry and Heide 1998).

In particular, we draw insights from the information asymmetry literature to construct our theoretical framework (Bergen, Dutta, and Walker 1992; Mishra, Heide, and Cort 1998). Parties in a marketing relationship typically possess asymmetric amounts of information about the exchange, but this information asymmetry may change over time, affecting how the parties behave. In the context of a joint manufacturer–distributor program, we argue that the distributor has less information about program profitability than the manufacturer before the launch of the program. This precontractual information scarcity (Bergen, Dutta, and Walker 1992) constrains the distributor's participation

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decision a priori, causing the distributor to assume a risk-aversive orientation After the distributor participates in the program, its knowledge about the program and its effectiveness increases This postcontractual information clarity (Bergen, Dutta, and Walker 1992) encourages the distributor to redefine its goals, often to optimize its self-interest This change of program information *ex ante* and *ex post* enables the distributor to reconsider its payoffs and gives rise to potential shift in its motivations before and after the program We use two major categories of motivations—one pertaining to improved efficiency (i e , rent-seeking motivations) (Jap 1999, 2001) and the other aiming to neutralize potential threats in an exchange relation (i e., loss-avoidance motivations) (Ghosh and John 1999, 2005)—as a way to capture the distributor's changing motivations *ex ante* and *ex post*

This study also examines how peer distributors' participation affects a focal distributor's program response We postulate that the degree of peer participation, a network construct, operates as a salient information signal because it represents the market's collective wisdom on the program as well as the potential competition among participating distributors This signaling effect changes the strength of different motivations in affecting the focal distributor's behavior From a broader perspective, this moderating effect demonstrates how network behavior affects dyadic relationships, as suggested by Antia and Frazier (2001), Heide and John (1992), and Wathne and Heide (2004)

Using data collected from distributors in a real-life joint sales program, this study makes three contributions First, we enrich the current understanding of distributor motivations and participation in joint sales programs (Jap 1999, 2001, Murry and Heide 1998) Drawing from the theoretical perspective of information asymmetry, we explicate the diversity of *ex ante* and *ex post* distributor motivations and assess their impacts This complements existing studies that use economic (Carson et al 1999), sociological (Granovetter 1985), or transaction cost (Heide and John 1988) approaches Second, our focus on how the distributor behaves *ex ante* versus *ex post* fills a need for more discriminant analyses on strategies to gain initial versus continuous compliance from channel partners in a program (Murry and Heide 1998) Third, by examining the moderating role of peer distributor participation, this study contributes to the network-based analysis of dyadic relationships, responding to the call Antia and Frazier (2001), Heide and John (1992), and Wathne and Heide (2004) issue

Theoretical Background

Information Asymmetry and Motivation Shift in a Joint Program

Information is the core ingredient when firms formulate their strategies to optimize their payoffs In channel dyads, the value of information is particularly salient given divergent and competing interests of channel members When one member is more or better informed than the other, information asymmetry emerges (Bergen, Dutta, and Walker 1992, Eisenhardt 1989) In a typical joint sales program, information asymmetry is common because the manufacturer and distributor possess different amounts of program-related information Over the course of the program, the balance of information asymmetry shifts, affecting how the manufacturer and distributor behave

In the *ex ante* stage, information about the program, including its potential effects and how other distributors respond to the program, rests more with the manufacturer The distributor attempts to gain accurate information from the manufacturer, in a way similar to a customer seeking information from a seller to evaluate his or her purchase decision (Mishra, Heide, and Cort 1998, Singh and Sirdeshmukh 2000) In Bergen, Dutta, and Walker's (1992) terminology, problems of "hidden information" exist in this stage

In the *ex post* stage, the information asymmetry tilts in favor of the distributor It is more informed than the manufacturer on how the market responds to the program and the amount of required efforts in executing the program Therefore, the manufacturer attempts to know the distributor's program behavior to maximize its own return, which represents a "hidden action" problem (Bergen, Dutta, and Walker 1992) In short, we posit that this changing information status *ex ante* and *ex post* is a salient cause for the distributor's motivation shift, which sequentially affects its participation

In each stage, we focus on a particular type of distributor behavior the manufacturer desires In the *ex ante* stage, the manufacturer asks the distributor to join the new program and makes necessary investments to initiate the program We refer to the distributor's preliminary, relationship-specific, program-enabling investments as "*ex ante* commitment" To distinguish between *ex ante* commitment and other continuous adjustments that may entail specialized investments (Cannon and Perreault 1999), we focus on the specific investments made before the start of the program Known also as "credible commitments" (Williamson 1983), "idiosyncratic investments" (Anderson and Weitz 1992), or "specific assets" (Bensaou and Anderson 1999), such *ex ante* commitments include the distributor's promotion expenses, human resources, and fixed assets specifically directed to serve and enable the joint program These difficult-to-transfer investments create economic value for the manufacturer–distributor relationship (Jap 1999, Rokkan, Heide, and Wathne 2003, Williamson 1983), but they can also be opportunistically exploited because the manufacturer can misrepresent the program and make false benefit claims to boost distributor participation Indeed, precontractual information scarcity prevents the distributor from accurately evaluating manufacturer claims or conducting comprehensive analysis on the program

In the *ex post* stage, the manufacturer often expects the distributor to exhibit agile adaptations to environmental changes rather than remain restricted to the original terms in the contract For example, a manufacturer prefers a distributor to adapt its promotional efforts to meet customer needs and preempt competitive offers (Murry and Heide 1998) We refer to this type of participative behavior as "*ex post* adaptation," defined as the distributor's ongoing adaptation to changing market needs after the program is in place Transaction cost theory provides prominent predictions to relate transaction-, relationship-, and environment-specific characteristics to the need for adaptation (Rindfleisch and Heide 1997; Williamson 2005). Yet, in the joint sales program, in which the manufacturer's and distributor's interests only partially overlap, the need for adaptation, as perceived by the manufacturer, does not necessarily translate into appropriate adaptive behavior by the distributor (Noordewier, John, and Nevin 1990; Wathne and Heide 2004). In the *ex post* stage, because the manufacturer often delegates some decision-making authority to its distributor (Jensen and Meckling 1976), the latter gains implementation-related information about the program, its effectiveness, and its profitability. Postcontractual information clarity presents the distributor an opportunity to redefine its options in ways that maximize its own payoffs.

Distributor Motivations: Loss Avoidance Versus Rent Seeking

Interfirm relationships literature posits several reasons a distributor participates in a joint program with a manufacturer. These include "loss-avoidance motivations," which focus on minimizing threats from the structural and environmental conditions in which firms operate (Fein and Anderson 1997; Ghosh and John 2005), and "rent-seeking motivations," which attempt to maximize the use of complementary assets to improve firm efficiency (Carson et al. 1999; Jap 1999). When a distributor is requested to join a program, concerns about potential losses (e.g., due to noncompliance, which invites retaliatory actions by the manufacturer) or missed opportunities (e.g., for new revenue streams) may "push" the distributor to comply with the request. These loss apprehensions reflect the distributor's vulnerability in a world of bounded rationality and potential opportunism (Fein and Anderson 1997).

In contrast, rent-seeking motivations (i.e., the pursuit of efficiency and profits) "pull" the distributor to participate in the joint sales program. The distributor may possess insufficient information to assess the real value of the new program, but its perceptions of program benefits often regulate its level of participation (Carson et al. 1999; Klein 1996). In other words, if the manufacturer can create a strong perception that the new program will generate supernormal profits and grant benefits to all participating firms, it will enhance the distributor's rent-seeking motivations.

Although distributor motivations can be considered from multiple theoretical lenses (Murry and Heide 1998), our conceptualization of loss-avoidance and rent-seeking motivations captures the firm's fundamental goal to avoid the negative and obtain the positive—that is, prevention and promotion foci (Crowe and Higgins 1997). In the following sections, we construct a framework that delineates how these motivations affect program participation *ex ante* and *ex post*. We also incorporate the moderating role of peer distributor participation, as depicted in Figure 1.

Hypotheses Development

Effects of Motivations on Ex Ante *and* Ex Post *Participation*

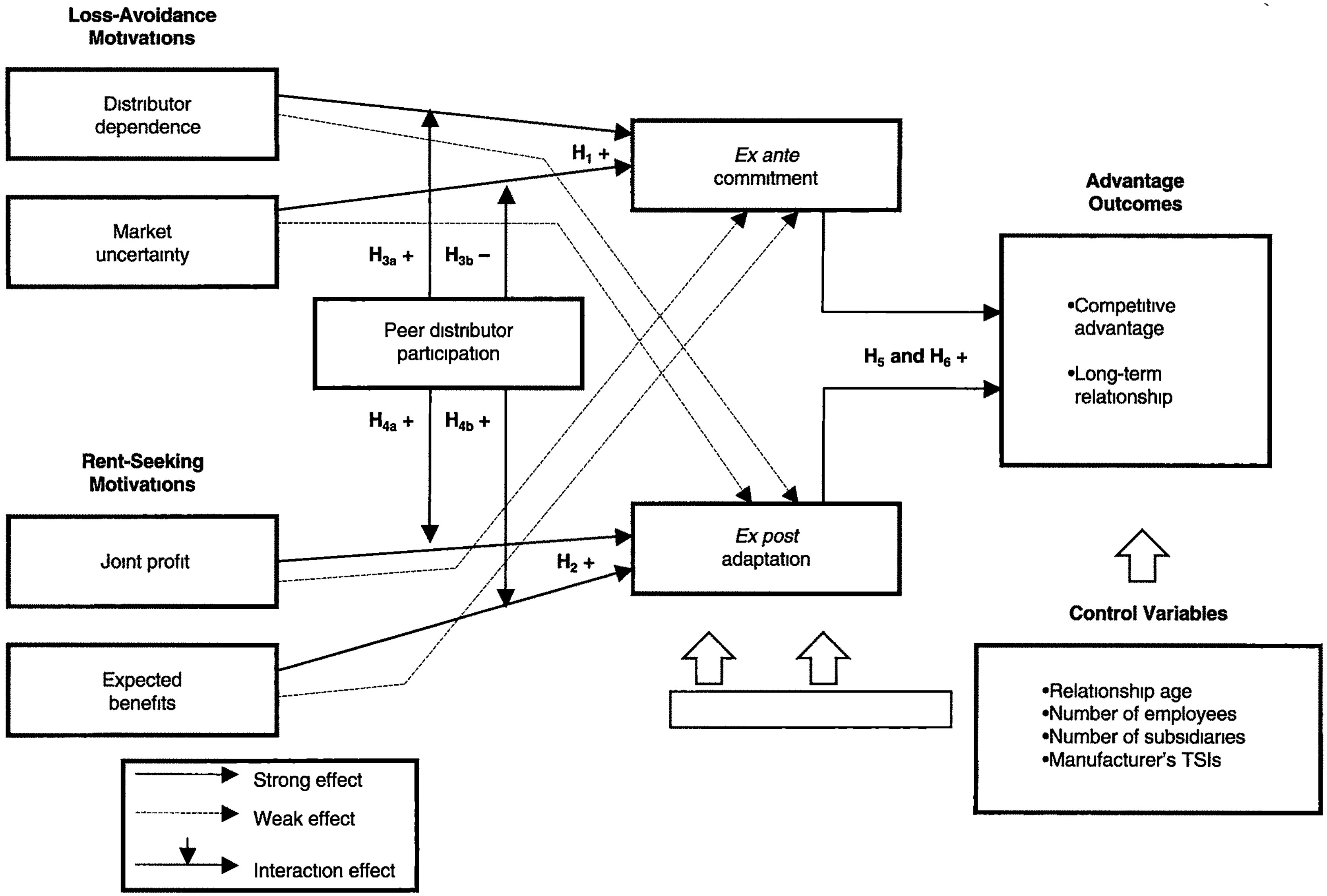
When requested to make an *ex ante* commitment, the distributor cannot make a fully informed decision because of precontractual information scarcity (Bergen, Dutta, and Walker 1992; Eisenhardt 1989). This inability to assess the true value of the program prevents the distributor from conducting an accurate rent-seeking calculation. As a result, the distributor may assume a loss-avoidance inclination in its behavior. We propose two contextual constraints that give rise to loss-avoidance motivations, which in turn drive the distributor's *ex ante* commitment.

The first contextual constraint, "distributor dependence," refers to the distributor's perceived dependence on the manufacturer, which may occur for several reasons. In some cases, dependence arises when the distributor deals with the "best" manufacturer, which provides higher returns than other suppliers in the market (Heide and John 1990). For example, manufacturers with strong brand images among end customers often charge a premium for their products. Distributors are motivated to work with these higher-performing manufacturers because a bigger "pie" offers higher returns (Jap 2001). In other instances, distributors have made specific investments to support a particular manufacturer, and the "sunk" properties of these investments make it costly for distributors to replace the manufacturer (Whyte 1994). Regardless of the sources that create dependence, the notion poses a core threat to the distributor (Frazier 1999; Heide and John 1988), constraining the distributor's participation decision. When the distributor declines to comply with the manufacturer's new investment request, it risks losing a source of income, forfeiting prior specific investments, or inviting retaliatory actions. In a relational context characterized by high dependence, the distributor is likely to have higher levels of compliance with the manufacturer's request.

Such program-specific investments create greater lock-in for the distributor. We do not address ways to safeguard these investments, because prior studies, including Heide (1994) and Rindfleisch and Heide (1997), offer significant findings in this area. Instead, we focus on methods for managing the distributor's motivations to make specific investments. Perceptions of dependence induce the sense of loss avoidance in the distributor. By joining and investing in the new program, the distributor can signal its support for a long-term exchange, which should help stabilize the relationship and strengthen its bond with the manufacturer (Fein and Anderson 1997; Rokkan, Heide, and Wathne 2003).

The second construct that induces the distributor to assume loss-avoidance motivation is "market uncertainty," or the unpredictability of the task environments in which the distributor operates (Buvik and John 2000). When the task environments, including customer demand and competitor actions, are highly uncertain, the "boundedly rational" distributor is unable to proactively search or efficiently detect valuable information to develop an optimal response (Dickson 1992). As a result, market uncertainty encourages the distributor to use familiarity as a decision heuristic (Heide and Weiss 1995). When approached by a familiar manufacturer, the distributor is likely to adopt a compliance strategy to establish a sense of control over future events (Bensaou and Anderson 1999; DiMaggio and Powell 1983).

FIGURE 1
Conceptual Framework of Distributor Participation in a Joint Sales Program



Distributor dependence and market uncertainty are independent constructs that constrain the distributor's participation decision to make an *ex ante* commitment. The former indicates the manufacturer's ability to inflict negative consequences (Kumar, Scheer, and Steenkamp 1998), and the latter reflects information-searching costs required to find a best alternative opportunity (Dickson 1992). Although compliance strategies driven by loss-avoidance motivations may not be optimal, they are likely to be "satisficing" (Simon 1979) for the distributor.

Similar arguments can be derived from organization studies. O'Reilly (1982) shows that unverifiable task-specific information creates conditions in which contextual information becomes the most salient cue for firm decisions. In the *ex ante* stage, because program-specific information is unclear and has questionable credibility, contextual information based on distributor dependence and market uncertainty becomes more influential. Therefore, we posit the following:

> H_1: Loss-avoidance motivations driven by distributor dependence and market uncertainty have greater impacts on *ex ante* commitment than rent-seeking motivations.

In the *ex post* stage, detailed information about program execution and profitability is more accessible to the distributor than to the manufacturer, tilting the information asymmetry in favor of the distributor. In the joint program, although the manufacturer may know how many new products the distributor has bought and sold, the distributor possesses additional information on the required efforts to implement the program effectively in the marketplace. To the distributor, this represents postcontractual information clarity, whereas to the manufacturer, this presents the hidden action problem (Bergen, Dutta, and Walker 1992).

Thus, we posit that the distributor's motivation underlying its voluntary *ex post* adaptation results primarily from rent efficiency considerations. This is consistent with agency theory that the principal should construct incentives to prompt the agent, in its own best interests, to take actions the principal prefers (Kreps 1990; Lafontaine 1992). For example, if a distributor considers the joint program compatible with its own interests, it will adapt any practices that are effective for the program as the task environment changes. In contrast, if a manufacturer exploits a lock-in situation or compels a distributor to adapt, the distributor's response will be perfunctory, deviating from the good-faith modifications the manufacturer prefers (Heide and John 1992; Noordewier, John, and Nevin 1990).

This study uses two variables to capture the distributor's rent-seeking motivations in a joint program. First, "joint profit" refers to the joint program's rent-generating ability or pie-expansion capability, which enhances the efficiency of all parties involved (Carson et al. 1999; Jap 1999). Second, "expected benefits" refer to the extent to which the distributor perceives how the pie is shared for its own interests (Carson et al. 1999; Jap 2001). Positive perceptions of these two variables should heighten the distributor's self-interest and thus establish a self-enforcing mechanism (Telser 1980) that encourages effective adaptive behavior.

Rent perceptions are first formed when the manufacturer introduces the joint program to the distributor. As the program progresses, the distributor revises and updates its rent perceptions. For example, when the distributor receives customer orders, it can assess the program's joint profit more precisely. Although financial reward and program payoffs may not be fully actualized when adaptation is needed, the distributor can form more accurate expectations about future gains, which motivate its level of adaptation. In contrast, loss-avoidance considerations that dominate the distributor's *ex ante* behavior fade into the background in the *ex post* stage.[1] Thus, we propose the following:

> H_2: Rent-seeking motivations driven by joint profit and expected benefits have greater impacts on *ex post* adaptation than loss-avoidance motivations.

Moderating Role of Peer Distributor Participation

We define "peer distributor participation" as the focal distributor's perception of other distributors' participative behavior in the joint program. The focal distributor may find out how its peer distributors respond to the program through formal (e.g., professional associations) and informal (e.g., private interactions) networks (Gu, Hung, and Tse 2008). Because the new program is of interest to all relevant distributors, they are motivated to conduct such information exchanges. We expect that a higher level of peer participation encourages the focal distributor's participation because of a tendency toward herd behavior (Banerjee 1992). However, we are interested in how peer behavior affects the strength of the two sets of motivations. Such an understanding will help us gain a systematic view of network influence on individual motivation–participation dynamics.

When peer distributors' participation is high, we posit that dependence serves as a stronger motivation for *ex ante* commitment. Assuming that a distributor is highly dependent on the manufacturer, its fear of losing the relationship would be acute when more distributors join the program because high peer participation indicates greater future competition. This fear motivates the distributor to commit to the program and stabilize its relationship with the manufacturer. To some extent, peer participation strengthens the manufacturer's market position, resulting in greater potential loss for a noncompliant distributor.

Moreover, a high level of peer participation works in another way. It prevents the manufacturer from engaging in opportunistic behavior because such behavior will lead to potential retaliation by networked distributors, damage to its reputation, and higher costs in future transactions (Antia and Frazier 2001; Wathne and Heide 2004). To the focal distributor, the curtailed manufacturer opportunism renders the program safer for its commitments. Taken together, we expect that peer participation increases the influence that a powerful manufacturer exerts on the distributor's decision

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[1] Distributor dependence and market uncertainty might induce *ex post* adaptation, but joint profit and expected benefit are probably more potent predictors. Subsequently, we test this possibility in the estimated model.

H_{3a} The higher the level of peer distributor participation, the greater is the extent to which distributor dependence increases *ex ante* commitment.

In contrast, we posit that the impact of market uncertainty on *ex ante* commitment is reduced by a high level of peer distributor participation. This is because peer participation provides the focal distributor with additional information on how other distributors think about the program. Potential program effects, such as likely benefits and risks of the program, are reflected by varying levels of peer participation and shared among participating distributors. Such information alleviates the information asymmetry that besets the focal distributor *ex ante*. While uncertainty arising from changing customer needs and competitive actions motivates the distributor to stabilize the manufacturer relationship, higher peer participation provides greater access to program-related information and thus enables a more informed decision for the focal distributor. As a result, the effect of market uncertainty is weakened. We propose the following:

H_{3b} The higher the level of peer distributor participation, the lesser is the extent to which market uncertainty increases *ex ante* commitment.

In the *ex post* stage, the focal distributor is expected to make voluntary adaptation to meet the changing needs of the program. However, as we discussed, the hidden action problem emerges because of the manufacturer's imperfect knowledge about how the distributor implements the joint program. Under such circumstances, monitoring may be less effective to promote *ex post* adaptation (Eisenhardt 1989). In contrast, self-interest becomes a more effective mechanism to regulate the distributor's behavior (Bergen, Dutta, and Walker 1992). We argue that such a pattern of increasing effectiveness of self-interest along with the declining role of monitoring is more pronounced as peer participation increases.

When more distributors participate in a program, the manufacturer must manage an increasingly complex web of distributor relationships. Cognitive limitations coupled with increasing information search costs prevent the manufacturer from monitoring the participating distributors completely (Bergen, Dutta, and Walker 1992; Kreps 1990). This monitoring deficiency implies that the distributors have greater freedom to act in accordance with their own best interests. Only when a self-enforcing mechanism is established—that is, the pie-expansion capability of the program is sufficiently convincing—will the distributor voluntarily perform *ex post* adaptation to increase gains for the program and, ultimately, for itself. This increased importance of self-interest in encouraging relational behavior echoes findings in the export marketing literature. Because exporters often lack information about overseas distributors' behavior, control mechanisms based on self-interest are more effective than those based on information sharing (Bello and Gilliland 1997; Zhang, Hu, and Gu 2008).

Moreover, peer participation constitutes a constraint on the manufacturer's behavioral latitude. When more distributors participate, the manufacturer cannot shirk its responsibilities in the joint program, because doing so may endanger its reputation and future business opportunities (Antia and Frazier 2001). As a result, the focal distributor has fewer concerns of manufacturer opportunism, so its expectation on program benefits is more reliable and deliverable. This enhances the positive impacts of rent perceptions on *ex post* adaptation behavior. Overall, we hypothesize the following:

H_4 The greater the peer distributors' participation, the greater is the extent to which (a) joint profit and (b) expected benefits increase *ex post* adaptation.

Consequences of Program Participation

The distributor's competitive advantages represent strategic benefits that enable the focal dyad to outcompete other dyads in the marketplace (Jap 1999). We expect that both *ex ante* commitment and *ex post* adaptation help increase such competitive advantages for the distributor. First, *ex ante* commitment enables the joint program to explore new product opportunities or serve new market segments. The distributor's investments in the program also help develop its competitive advantages, such as enlarged market share in an area, closer bonding with end customers, and a preemptive position in a new product market. Second, *ex post* adaptation helps the manufacturer–distributor dyad respond in a timely manner to environmental changes and realign mutual resources proactively. This changing realignment constitutes a critical capability in the focal dyad that others likely cannot duplicate (Eisenhardt and Martin 2000). Thus, we posit the following:

H_5 A distributor's participation through (a) *ex ante* commitment and (b) *ex post* adaptation strengthens the competitive advantages of the distributor.

Both *ex ante* commitment and *ex post* adaptation of the participating distributor provide positive signals to the manufacturer, which increases its continuity expectations and strengthens the relationship in the long run. Thus:

H_6 The distributor's greater participation through (a) *ex ante* commitment and (b) *ex post* adaptation strengthens the distributor's long-term relationship with the manufacturer.

Method

Research Setting and Data Collection

We test our framework using data collected from the channel of one of the leading manufacturers in a niche food product industry. The manufacturer's distribution network spans more than 60 countries. Through a joint new product launch with its independent distributors in China, the firm hopes to enhance its market position in this highly competitive market. The study focuses on the distributors' motivations to participate in the program (referred to as "program X" for anonymity), their participation behavior, and their evaluation of program outcomes. By investigating distributors with a common manufacturer, we achieve reasonable variation in the constructs of interest while controlling for exogenous factors, such as industry and brand name, that may confound the study results.

Because this study attempts to verify postulates of a theoretical model, rather than to generalize the results to a new population, we believe that the study context is appropriate (Morgan and Hunt 1994) Moreover, the naturally observed event, involving an actual manufacturer and real-life distributors, allows the respondents to specify their motivations and participation behavior without much recall effort and evaluate the program's performance on a real-time basis (Murry and Heide 1998)

We designed an English-language questionnaire and then translated it into Chinese To ensure conceptual equivalence, two independent translators back-translated the Chinese version into English Any disagreements were discussed by the authors and translators until consensus was reached (Hoskisson et al 2000) With the help from the manufacturer, we conducted in-depth interviews with seven senior managers identified from the firm's distributors list In these interviews, we asked the managers to evaluate the questionnaire's relevance and clarity We then revised several items on the basis of their feedback The final survey was conducted in Chinese

Hoskisson and colleagues (2000) recommend face-to-face interviews to obtain reliable information in emerging economies Therefore, we randomly drew 200 names from the list of approximately 1000 distributors provided by the manufacturer as interview targets in an annual distributor conference in China The conference is an annual event, in which the manufacturer makes important announcements for distributors and more than 80% of the firm's distributors attended Before the conference, we called the selected distributors to (1) invite their participation, (2) ascertain whether representatives of attending firms had sufficient knowledge about the specific program, and (3) ensure that the selected distributors had been with the program for at least six months so that they could evaluate the adaptations required by the program and its outcomes All the representatives in the sample hold titles of chief executive officer, president, director, or senior manager and serve as the key contact with the manufacturer

The screening and invitation efforts revealed that 11 names were not qualified for the study, and 52 interviewees either could not be identified or rejected the invitation, which left 137 potential targets The authors and two trained interviewers then attended the conference to conduct face-to-face interviews with these distributors To ensure that the respondents adopted an organizational perspective, we explicitly asked them to focus on organizational properties and to evaluate aspects of the firm-to-firm relationship before answering the questionnaire We also promised confidentiality to the respondents and confirmed that the data collected would not be accessible to the manufacturer and would be used only for large-sample statistical analyses Each interview took approximately 20 minutes, and each respondent received a souvenir from the sponsoring university as a token of appreciation We successfully conducted interviews with 131 distributors We assessed potential nonresponse bias by comparing the respondents with all distributors on several characteristics, such as relationship age, number of employees, number of subsidiary firms/branches, and business areas We found no significant difference among these variables, which indicates that nonresponse bias is not a significant concern

To address the potential issue of common method bias, we obtained second-wave responses by recontacting all 131 distributing companies by telephone and asking to speak to a different person in the same company to complete the questionnaire In this second-wave survey, we collected 49 responses, a series of t-tests and multivariate analyses of variance showed no significant differences between the original and the follow-up samples in terms of the key variables studied Furthermore, to determine correlation stability, we used the second-wave responses pertaining to independent variables, including the two rent-seeking variables, the two loss-avoidance variables, and the peer participation variable, and then we correlated them with the first-wave responses for the mediating and outcome variables The correlation pattern is similar to that of the original sample This indicates that when a specific correlation is high, it reflects the actual organizational characteristic rather than any systematic response bias Common method bias in the interaction between motivation variables and peer distributor participation is not a concern, because the respondents are not expected to find complicated interactive relationships in the framework (Aiken and West 1991) In addition, most study constructs are either externally verifiable referents or external manifestations of internal states, which alleviates concerns about common method bias (Rindfleisch et al 2008)

Statistically, we test for the potential problem of common method bias using the hierarchically nested covariance structure model in a confirmatory factor analysis (Podsakoff et al 2003, Williams, Cote, and Buckley 1989, Ye, Marinova, and Singh 2007) In the model estimation, we specify a common method factor in which each manifest item loads on the method factor, as well as its theoretical construct Following Carson (2007), we calculate the percentage of method variance (19 5%), which is relatively low compared with the median amount of the method variance (25%) that Williams, Cote, and Buckley (1989) observe for survey studies To confirm whether the method factor extracts significant systematic variance, we compare the models with and without the method factor and obtain insignificant change-in-fit statistics ($\Delta\chi^2 = 29\ 35$, $\Delta df = 24$, $p >$ 10)[2] Therefore, we conclude that common method bias does not present a significant threat to the study

Measures

We adapt measurement scales from previous research to the study context All the scales are five-point Likert scales (1 = "strongly disagree," and 5 = "strongly agree") In Table 1, we report the interconstruct correlation matrix and descriptive statistics

In Table 2, we provide the constructs, measurement items, and their composite reliabilities (CR) All reliability values exceed 66, suggesting acceptable levels (Bagozzi

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[2] There is a rich literature that deals with common method bias It is acknowledged that if the method factor extracts a significant portion of systematic variance, we follow Ye, Marinova, and Singh's (2007) method to control its effects

TABLE 1
Correlation Matrix of Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Joint profit	1												
2 Expected benefits	31**	1											
3 Distributor dependence	31**	– 01	1										
4 Market uncertainty	– 02	01	21*	1									
5 *Ex ante* commitment	24**	11	40**	30**	1								
6 *Ex post* adaptation	35**	37**	12	– 02	19*	1							
7 Peer distributor participation	32**	32**	09	02	23**	30**	1						
8 Competitive advantages	37**	22*	35**	13	47**	33**	40**	1					
9 Long-term relationship	21*	05	31**	27**	41**	11	07	28**	1				
10 Relationship age	– 02	– 08	05	– 15	06	06	06	01	– 01	1			
11 Number of employees	– 04	06	– 05	01	02	– 04	– 04	03	06	31**	1		
12 Number of subsidiaries	01	– 12	14	– 07	16	– 30**	05	11	12	12	01	1	
13 Manufacturer's TSIs	31**	16	17	– 00	21*	17	23*	33**	07	– 03	01	12	1
M	3 90	3 40	3 95	3 82	3 93	4 27	3 72	4 25	4 50	4 89	38 22	2 45	3 46
SD	56	55	80	66	52	51	46	61	51	3 09	33 71	6 10	61

*$p <$ 05 (two-tailed t-test)
**$p <$ 01 (two-tailed t-test)
Notes N = 131

TABLE 2
Measurement and Confirmatory Factor Analysis Results

Constructs and Measures	SFL
Distributor Dependence (α = .82)	
Circle the number that best represents your relationship with this manufacturer	
1 It would be difficult for us to replace this manufacturer	88*
2 We do not have a good alternative to this manufacturer in our trading area	79*
3 We are quite dependent on this manufacturer (deleted)	
Market Uncertainty (α = .73)	
Circle the number that best represents your serving market	
1 In our kind of business, customers' product preferences change quite a bit over time	87*
2 The demand in our industry has been very unstable	70*
3 Our customers tend to look for new products all the time	48*
Joint Profit (α = .84)	
Circle the number that best represents your estimation about X program's contributions to *both* parties	
1 The program would make our channel more efficient by reducing costs and/or generating revenues	88*
2 The program would be more advantageous than the original system	77*
3 The program would increase joint profit	72*
Expected Benefits (α = .66)	
Circle the number that best represents your estimation about X program's contributions to *your* company	
1 In general, our company would gain more benefits from the program than this manufacturer	64*
2 Profit distribution specified in the program would be fair to our company	70*
3 The gains our firm was entitled in the program would be appropriate	54*
***Ex Ante* Commitment (α = .77)**	
Circle the number that best represents your investments before the launch of X program	
1 We have dedicated whatever people and resources it takes to establish X program	76*
2 We have committed a great deal in establishing X program	72*
3 We have made substantial commitment in personnel dedicated to X program	69*
***Ex Post* Adaptation (α = .72)**	
Circle the number that best represents your adaptive efforts after the launch of X program	
1 Our company has made adaptations in implementing X program to cope with changing program terms and conditions	82*
2 When some unexpected situations arose with X program, our company has worked out a new deal than hold on to the original terms	73*
3 Our company has frequently exchanged information with this manufacturer for X program, not only according to a prespecified agreement	45*
Peer Distributor Participation (α = .71)	
Circle the number that best represents other distributors' reaction to X program at the time of your considering the program	
1 Most firms in our industry had agreed with this manufacturer's promotion and arrangements of X program	79*
2 X program had been adopted by most firms in our industry	64*
3 Most firms in our industry believed that X program was proper to carry	58*
Competitive Advantages (α = .81)	
Circle the number that best represents your opinion about the X program after it has been implemented	
1 The collaboration has resulted in more strategic advantages for us	91*
2 Our strategic advantage becomes harder for our competitors to imitate	82*
3 The collaboration has created greater value for our customers	53*
Long-Term Relationship (α = .74)	
Circle the number that best represents your opinion about this manufacturer	
1 We share our long-term goals with this manufacturer	76*
2 We would like to develop a long-term relationship with this manufacturer	74*
3 We focus on long-term goals in this relationship	60*

*$p <$ 001 (two-tailed t-test)

Notes N = 131, α = composite reliability, and SFL = standardized factor loading All measures are anchored at 1 = "strongly disagree" and 5 = "strongly agree"

and Yi 1988) We adapted the measure of distributor dependence from Jap and Ganesan's (2000) scale of a retailer's dependence on its supplier After removing an item with low interitem correlation, the final measure achieves a CR of 82[3] The measure of market uncertainty is based on Jaworski and Kohli's (1993) scale, and it attains a CR of 73 Because we could not find any existing measures of joint profits and expected benefits, we developed items by adapting the concepts of pie-expansion (Jap 1999) and pie-sharing (Jap 2001) expectations to our study context Specifically, we asked the respondents to estimate how much program X would contribute to both parties and to their own companies Three items pertaining to channel efficiency and joint profit gains constitute the scale for joint profit (CR = 84), and three items regarding the perceived benefits that should accrue to the individual distributor appear in the scale for expected benefit (CR = 66)

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[3] With all three items to measure distributor dependence, we achieve similar results in hypothesis testing

We assess *ex ante* commitment on the basis of measures of program-specific commitments published in previous research (Anderson and Weitz 1992, Jap and Ganesan 2000) As previously noted, we focus on the distributor's initial commitments before the launch of the program The measure has a CR of 77 To measure *ex post* adaptation, we adapt the measures of flexibility that Noordewier, John, and Nevin (1990) and Heide and John (1992) developed to reflect the distributor's efforts to adapt to changing circumstances during the joint program, without being restricted to prespecified agreement Because flexible handling of unexpected situations often rests on effective communication between transaction parties, we complement two items of flexibility with a third item on information sharing The three items exhibit satisfactory reliability, with a CR of 72

Using Zaltman, Duncan, and Holbek's (1973) conceptualization of network participation, we operationalize peer distributors' participation in terms of their reaction to the manufacturer's new sales program Three items explicitly ask for the focal distributor's perception of other firms' participative attitude and behavior We obtained a CR of 71 for these three items For the outcome variables, competitive advantages and long-term relationship, we adapt scales from Jap (1999) and Ganesan (1994), respectively We ask the respondents to evaluate their competitive advantages and relationship with the manufacturer after implementation of the new sales program The CRs of the two scales are 81 and 74, respectively

Finally, we include control variables that appear frequently in interfirm studies (Antia and Frazier 2001, Heide and John 1990, Jap and Ganesan 2000) Relationship age measures the duration of the distributor's association with the manufacturing firm Number of employees and number of subsidiaries serve as proxies for the size of the distributor The manufacturer's TSIs measure the focal manufacturer's transaction-specific investments to develop the distributor's business

Confirmatory Factor Analysis and Validity Assessment

After verifying that an exploratory factor analysis for the scale items results in the expected construct solutions, we submit all constructs to confirmatory factor analyses using AMOS 6 (Arbuckle and Wothke 1999) Because the ratio of the sample size to the number of parameter estimates is less than five, we conduct two confirmatory factor analyses, grouping measures of related constructs together (Atuahene-Gima 2005, Bentler and Chou 1987, Moorman and Miner 1997) The results indicate a satisfactory fit of the two measurement models one that includes the four motivation constructs and two participation constructs (χ^2 = 149 99, d f = 104, $p <$ 01, comparative fit index [CFI] = 91, incremental fit index [IFI] = 92, and root mean square error of approximation [RMSEA] = 058) and one with the peer distributor participation and advantage outcomes (χ^2 = 41 19, d f = 24, $p <$ 05, CFI = 94, IFI = 94, and RMSEA = 074) As Table 2 shows, all measurement items have significant factor loadings on their corresponding theoretical constructs ($p <$ 001), impling convergent validity To establish discriminant validity, we conduct a series of chi-square difference tests for all constructs in pairs to determine whether the freely estimated model (correlation estimated freely) provides a better fit to the data than the restricted model (correlation fixed to 1) (Bagozzi, Yi, and Phillips 1991) All chi-square differences are significant ($p <$ 01), in support of discriminant validity

Data Analysis and Results

Main Effects of Motivations

We estimate a structural model of the conceptual framework for the whole sample (N = 131), including relationship age, number of employees, number of subsidiaries, and manufacturer's TSIs to control for their effects on the four endogenous variables, as Figure 1 depicts Correlations among the four motivation constructs, as well as those among the four control variables, are freely estimated to account for possible relationships between these factors The chi-square value for the structural model is 45 77 (d f = 25, $p <$ 01, goodness-of-fit index [GFI] = 95, IFI = 92, CFI = 90, and RMSEA = 08) These results suggest that the conceptual model fits the data well In Table 3, we provide estimation results for the structural path coefficients and related hypotheses

In H_1, we predict that loss-avoidance motivations make a greater contribution to *ex ante* commitments than rent-seeking motivations The results we depict in Table 3 show that loss-avoidance motivations, including distributor dependence (β = 27, $p <$ 001) and market uncertainty (β = 27, $p <$ 001), significantly encourage the distributor's *ex ante* commitments However, we do not find any significant effects of rent-seeking motivations on *ex ante* commitment ($p >$ 10) In H_2, we anticipate that the effects of rent-seeking motivations will be greater than the effects of loss-avoidance motivation on *ex post* adaptation The analysis results show that the two rent-seeking motivation constructs exert both positive and significant impacts on *ex post* adaptation (joint profit β = 21, $p <$ 05, expected benefits β = 25, $p <$ 001) However, neither of the two loss-avoidance motivations has a significant impact on *ex post* adaptation ($p >$ 10) Therefore, we conclude that loss-avoidance motivations are more effective in driving *ex ante* participation, whereas rent-seeking motivations have greater impacts on *ex post* participation, in support of H_1 and H_2

Interaction Effects

To test the moderating roles of peer distributor participation (H_3 and H_4), we split the sample into two groups—high and low peer distributor participation, relative to the median value (3 7) Following the moderation test procedure that Jaccard, Turrisi, and Wan (1990) suggest, we first conduct multigroup estimation, with all path parameters from the motivation variables to participation modes freely estimated across the high and low groups If the resultant individual

TABLE 3
Summary of Results: Hypothesis Testing of Main Effects

Structural Paths	Estimates	Hypotheses
Distributor dependence → *ex ante* commitment	27 (3 49)**	H_1 supported
Market uncertainty → *ex ante* commitment	27 (3 26)**	
Joint profit → *ex ante* commitment	10 (1 23)	
Expected benefits → *ex ante* commitment	08 (1 04)	
Joint profit → *ex post* adaptation	21 (2 52)*	H_2 supported
Expected benefits → *ex post* adaptation	25 (3 20)**	
Distributor dependence → *ex post* adaptation	04 (52)	
Market uncertainty → *ex post* adaptation	– 08 (–1 01)	
Ex ante commitment → competitive advantages	36 (4 67)**	H_{5a} supported
Ex post adaptation → competitive advantages	28 (3 46)**	H_{5b} supported
Ex ante commitment → long-term relationship	41 (4 96)**	H_{6a} supported
Ex post adaptation → long-term relationship	05 (60)	H_{6b} not supported
Control Variables		
Relationship age → *ex ante* commitment	10 (1 23)	
Number of employees → *ex ante* commitment	– 07 (– 86)	
Number of subsidiaries → *ex ante* commitment	– 04 (– 43)	
Manufacturer's TSIs → *ex ante* commitment	12 (1 52)	
Relationship age → *ex post* adaptation	11 (1 37)	
Number of employees → *ex post* adaptation	– 02 (– 27)	
Number of subsidiaries → *ex post* adaptation	– 01 (– 15)	
Manufacturer's TSIs → *ex post* adaptation	07 (97)	
Relationship age → competitive advantage	– 10 (–1 29)	
Number of employees → competitive advantage	07 (91)	
Number of subsidiaries → competitive advantage	15 (1 92)	
Manufacturer's TSIs → competitive advantage	16 (2 20)*	
Relationship age → long-term relationship	– 08 (– 98)	
Number of employees → long-term relationship	09 (1 11)	
Number of subsidiaries → long-term relationship	09 (1 08)	
Manufacturer's TSIs → long-term relationship	– 03 (– 42)	
Overall Model Fit		
χ^2 = 45 77, d f = 25, χ^2/d f = 1 83, $p <$ 01, GFI = 95, IFI = 92, CFI = 90, RMSEA = 08		

*$p <$ 05 (two-tailed t-test)
**$p <$ 001 (two-tailed t-test)
Notes Standardized parameter estimates are provided, with t-values in parentheses N = 131

parameter estimates differ significantly across the two groups (e g , the gamma coefficient is significant in one group but insignificant in the other), we can conclude that a significant interaction exists, in line with Aiken and West (1991) and Moorman and Miner (1997) However, if a pair of parameter estimates is significant for both groups, we proceed to an individual parameter estimation, in which we constrain this pair of parameter estimates to be equal across the two groups and then assess the change of model fit between the models A significant chi-square value change between the two models provides evidence of interaction, and an insignificant change indicates the equivalence of parameters

Multigroup estimation We estimate structural models simultaneously for the high and low peer distributor participation groups, in which we specify the two loss-avoidance motivations for *ex ante* commitment and the two rent-seeking motivations for *ex post* adaptation, for model parsimony, we do not specify the insignificant main effects (i e , rent seeking on *ex ante* commitment and loss avoidance on *ex post* adaptation) All parameters are freely estimated across groups The overall fit is satisfactory, with the model chi-square of 24 78 (d f = 16, $p =$ 074, GFI = 94, IFI = 89, CFI = 87, and RMSEA = 065) Thus, the model offers a good fit to the data for both groups However, we are more interested in parameter differences, and in Table 4, we provide estimation results for moderating effects and the related hypotheses

In H_{3a}, we posit that the greater the peer distributors' participation, the greater is the extent to which distributor dependence increases *ex ante* commitment From Table 4, we note that distributor dependence exerts significant impacts on *ex ante* commitment for both high and low peer participation groups (β_{HI} = 36, $p <$ 001, β_{LOW} = 42, $p <$ 001) Therefore, we proceed to the test of chi-square differences between models with and without constraints of parameter equivalence The model that constrains the path between distributor dependence and *ex ante* commitment to be equal across groups results in a chi-square of 7 901 (d f = 11, $p >$ 10) Compared with the baseline model, in which all parameters are freely estimated, the change in the chi-square is 006 (d f = 1, $p >$ 10), which suggests equivalence of parameters Therefore, H_{3a} is not supported H_{3b} proposes a negative interaction between market uncertainty and peer distributor participation Consistent with this prediction, the results show that market uncertainty has a positive impact on *ex ante* commitment when peer distributor

TABLE 4
Summary of Results: Moderation Effects of Peer Distributor Participation

Hypothesized Paths	Peer Distributor Participation Low (N = 76)	 High (N = 55)	Hypotheses
Distributor dependence → *ex ante* commitment	42 (3 88)***	36 (3 29)***	H_{3a} not supported
Market uncertainty → *ex ante* commitment	36 (3 33)***	15 (1 38)	H_{3b} supported
Joint profit → *ex post* adaptation	20 (1 61)	30 (2 67)**	H_{4a} supported
Expected benefits → *ex post* adaptation	31 (2 44)*	10 (87)	H_{4b} not supported
Overall Model Fit			
χ^2 = 24 78, d f = 16, *p* = 074, GFI = 94, IFI = 89, CFI = 87, RMSEA = 065			

*$p <$ 05 (two-tailed t-test)
**$p <$ 01 (two-tailed t-test)
***$p <$ 001 (two-tailed t-test)
Notes Standardized parameter estimates are provided, with t-values in parentheses

participation is low (β_{LOW} = 36, $p <$ 001), but the effect becomes insignificant with high peer distributor participation (β_{HI} = 15, $p >$ 10) Therefore, H_{3b} is supported

With H_{4a}–H_{4b}, we consider the positive interaction between peer participation and rent-seeking motivations and its effects on *ex post* adaptation H_{4a} receives support, joint profit has a strong positive impact on *ex post* adaptation in the high peer participation group (β_{HI} = 30, $p <$ 01) but an insignificant influence in the low group (β_{LOW} = 20, $p >$ 10) However, the impacts of expected benefits show an opposite pattern, with significant influence in the low group (β_{LOW} = 31, $p <$ 05) but an insignificant impact in the high group (β_{HI} = 10, $p >$ 10), thus, H_{4b} is not supported That is, although peer participation increases the importance of joint profit motivation, as we expected, it may reduce the impact of expected benefits on *ex post* adaptation This seemingly surprising result may be explained by the notion that as a greater number of peer distributors join the program, the focal distributor may feel increased competitive pressure from its peers Thus, the focal distributor is in a weakened position to bargain for a greater slice of the pie As a result, the focal distributor shifts its attention to the joint profit, or the overall profit-generating capability of the program The expected benefits or the profit-sharing rule then becomes less relevant to its adaptive behavior The results indicate that in the *ex post* stage, though the effectiveness of rent-seeking motivations increases in general, as more distributors participate, the manufacturer should focus more on the joint profit in the program to ensure distributors' continuous adaptation

Supplementary analysis We conduct a supplementary analysis using ordinary least squares to validate the interaction results obtained from structural equation modeling We specify two regression models in which *ex post* adaptation and *ex ante* commitments represent the dependent variable For the regression of *ex ante* commitment, we include the four motivation variables and two interaction terms between peer participation and loss-avoidance motivations (H_{3a}–H_{3b}) For the regression of *ex post* adaptation, we include the same motivation variables and two interaction terms with rent-seeking motivations (H_{4a}–H_{4b}) The variance inflation factors indicate no significant multicollinearity (ranging from 1 to 2) The R-square for the two regression runs are 26 and 22, suggesting satisfactory explanatory power of proposed predictors The regression results confirm the previous findings Regarding *ex ante* commitment, we find a significant interaction between peer participation and market uncertainty (β = – 14, $p <$ 05), whereas the interaction with dependence does not reach significance, in support of H_{3b} only Moreover, the interaction with joint profit is positively associated with *ex post* adaptation (β = 12, $p < .10$), in support of H_{4a} In contrast to H_{4b}, the interaction with expected benefits negatively affects *ex post* adaptation (β = – 15, $p <$ 05)

Effects of Participation Behavior

With H_5 and H_6, we examine the effects of the distributor's *ex ante* commitment and *ex post* adaptation on competitive advantages and long-term relationships The results in Table 3 show that both *ex ante* commitment (β = 36, $p <$ 001) and *ex post* adaptation (β = 28, $p <$ 001) significantly improve the distributor's competitive advantages, in support of H_{5a}–H_{5b} *Ex ante* commitment registers positive significance (β = 41, $p <$ 001), whereas *ex post* adaptation has no significant impact ($p >$ 10) on long-term relationships, in support of H_{6a} but not H_{6b} Regarding the control variables, we find that the manufacturer's TSI contributes significantly to explaining competitive advantages, consistent with previous transaction cost analysis research (Jap and Ganesan 2000) None of the other control variables have a significant impact

Discussion

Against the backdrop of the increasing need to collaborate, this study investigates three issues that are crucial to managing distributors' participation in joint programs They include (1) the motivations (loss avoidance or rent seeking) that drive participation, (2) the means to ensure continuous program engagement in both *ex ante* and *ex post* stages, and (3) the network conditions that vary the effects of motivations

The study confirms that rent-seeking factors, such as joint profit and expected benefits, are fundamental considerations that drive a distributor's program participation Consistent with an economizing calculus that emphasizes efficiency maximization (Ghosh and John 2005), the study validates the role of economic incentives in encouraging the distributor's continuous adaptation Marketing channel literature has long recognized the importance of flexible handling of unexpected circumstances, sharing of valuable information, and short-term sacrifices for long-term benefits (Gundlach, Achrol, and Mentzer 1995, Heide and John 1992), all of which characterize partnering firms' continuous efforts to adapt to changing environments The results suggest that a positive assessment of program benefits supports such continuous and adaptive efforts

However, this study points to a key limitation of rent-seeking motivations The expected benefits and joint profit exert an insignificant impact on *ex ante* commitment, which instead is strongly influenced by market uncertainty and distributor dependence When the distributor receives a request to make specific commitments in a joint program, it possesses insufficient information to perform an accurate cost–benefit analysis Instead, the existing relationship structure and task environment provide more readily accessible cues for decisions The results indicate that the distributor is more likely to comply with the manufacturer's request when the dependence structure favors the manufacturer and/or market conditions are highly unpredictable To some extent, the distributor's participation represents a compelled action because noncompliance may bring negative consequences inflicted by a powerful manufacturer or emanating from an uncertain environment The need to maintain the manufacturer relationship and gain control over market uncertainties leads to a more cooperative stance *ex ante* This loss-avoidance motivation was expressed by one of the interviewees "Such programs are more like a routine Why don't we join? The manufacturer is a named brand in our industry We certainly don't want to lose it" Another interviewee provided the following description "We are under great pressure these days There are lots of competitors, many new products Luckily, we've got good relations with our suppliers The business has been stable"

The compliance strategy with a familiar manufacturer does not necessarily imply a passive measure It accommodates active agency as a response to institutional pressures and expectations (Grewal and Dharwadkar 2002, Oliver 1991) A compliance strategy may result in various benefits, such as increased stability, external support, continued commitment, and long-term growth Thus, when driven by loss-avoidance motivations, the distributor's compliance with the manufacturer's program request can lead to social and economic betterment, a stronger long-term relationship, and greater competitive advantages

Furthermore, this study delineates moderating effects of peer distributor participation on links between the focal distributor's motivations and its participation behavior In the *ex ante* stage, peer participation offers access to additional information because it results in more avenues for sharing market information about the program This effect alleviates the information asymmetry that besets the focal distributor and helps balance the influence of market uncertainty Conversely, distributor dependence significantly influences *ex post* commitment despite varying levels of peer participation, revealing the strong constraint of an embedded relationship structure on the distributor's decision making In the *ex post* stage, as peer participation instigates hidden actions of the distributor, the distributor's expectations of positive joint profits become more important for adaptive behavior The distributor adapts to changing needs of the program to maximize the program value for both parties in the dyad However, this greater concern with the joint profit is accompanied by increased competitive pressures from other participating distributors To some extent, the focal distributor must refrain from an overemphasis on individual and exclusive payoffs In summary, peer distributors' participation offers more behavioral discretion to the focal distributor but also requires more responsibilities for the joint program

Contributions

This study contributes to interorganizational relationship literature in theory development and empirical validation First, we offer an additional perspective for understanding distributors' motivations to join a manufacturer-initiated program Extant literature outlines environmental, organizational, and interpersonal factors that may lead to interfirm collaboration processes (Jap 1999, Murry and Heide 1998) These processes involve various participation motivations, including the use of complementary capabilities and learning of new skills However, few research attempts have been made to differentiate *ex ante* participation (characterized by program-specific investments) from *ex post* participation (characterized by continuous adaptation and flexible handling of unexpected circumstances), nor have studies delineated the effects of unique motivations across different program stages By drawing on the information asymmetry perspective in a marketing channel context, we demonstrate that information asymmetry helps explain the changing roles of the manufacturer and the distributor, as well as their underlying information (dis)advantage before and after the launch of the joint program In the *ex ante* stage, when distributors lack sufficient information, they cannot verify the true value of the program (Mishra, Heide, and Cort 1998), and loss-avoidance dominates In the *ex post* program stage, the table is turned, distributors can assess their participation through program-related benefit outcomes, and rent-seeking perceptions become more effective for encouraging cooperative behavior

Thus, the findings demonstrate that a multistage perspective of information asymmetry offers a useful framework to explain a distributor's participation behavior The distributor's participation motivations are nonstatic and depend on its possession of program-relevant information In addition, distributors' participation is not only based on a gain-and-loss calculation but also driven by a desire to neutralize both internal and external threats to its partner relationship Overall, this study extends the current thinking on interfirm collaborative processes with particular relevance to motivation diversity and its potential dynamics

Second, this study contributes to a better understanding of network influences on dyadic interorganizational relationships (Anderson, Håkansson, and Johanson 1994, Antia and Frazier 2001, Heide 1994, Wathne and Heide 2004) Current views of dyadic relationships recognize that dyads are part of a network of relationships that affect the focal dyad's behavior and performance Antia and Frazier (2001) explore how structural characteristics, such as the centrality and density of a network, may affect a channel member's behavior Wathne and Heide (2004) investigate the governance implications of an upstream relationship on a downstream relationship We regard peer participation as an important source that produces critical signals to focal distributors, and this improved knowledge reduces the reliance on environmental cues (e g , market uncertainty) to make *ex ante* decisions Moreover, peer participation weakens the manufacturer's information position *ex post*, complicating its monitoring efforts As such, the distributor has greater behavioral latitude and, to a greater degree, regulates its behavior according to the positive economic prospects the program offers

Managerial Implications

The marketplace is increasingly characterized by intense competition, fragmented demands, rapid technological changes, and major economic shifts, which makes interfirm collaboration essential for firms This study focuses on the manufacturer-initiated program with the distributor, a common strategy in marketing channels The findings provide several insights into this topic The general tenet is that manufacturers need to manage their programs in a discriminant, proactive, and system-sensitive manner

Because distributors' core motives may change during a joint program, manufacturers should be discriminant and proactive in managing the distributors' perceptions before and after the program launch Loss-avoidance considerations may arise from relationship characteristics, industry competition, and shifting customer needs In a world of uncertainties, the bond with a familiar, reliable, and competent manufacturer gives distributors a sense of control and stability To provide a feeling of safety, manufacturers should invest in long-term relationship management and signal their commitment through various support programs, such as training, technical aid, and promotional assistance These programs remove distributors' fear of opportunism and encourage their participation and investment In a mutually beneficiary circle, this study suggests that the distributor's inclination toward loss avoidance turns into a preference for strengthening its relationship with the manufacturer because both have invested together in the joint program

Yet distributors' defensive motivations may become rent seeking when the situation changes and distributors gain a more advantageous position This study indicates that to accommodate distributors' rent-seeking motivations, manufacturers should implement a proper incentive structure, such as a clear and escalating profit-sharing plan The conscious, proactive use of various influence strategies may enhance program success—in contrast with the "half-baked" joint programs that distributors exit or silently disengage

Finally, manufacturers should assume a system-sensitive view in their relationship with individual distributors Peer distributors' participation influences how a focal distributor behaves because of its signaling effect In a highly efficient Web-based society, the actions of peer distributors are increasingly transparent, often beyond what manufacturers realize Diligent distributors could discover whether other distributors have committed to joint programs through distributors' early announcements on their own Web sites Small distributors that depend on and are highly vulnerable to manufacturers could share their program intentions with their peers to gain self-protection or fair rewards Therefore, it is essential for manufacturers to assume a network perspective in the flat and increasingly open marketplace and to design appropriate incentive schemes for the allied distributors that are beneficial to both parties

Limitations and Further Research

We acknowledge several limitations of this study First, we use distinctive factors to represent the rent-seeking and loss-avoidance motivations that distributors may have toward a manufacturer-initiated program This approach could be improved in several ways, such as using a broader and more comprehensive taxonomy of distributor motivations that would help confirm the study results For example, researchers might explore transaction-specific benefits, such as the ease of program implementation and complementarity with existing programs, as potential rent-seeking factors Similarly, structural or environmental constraints, including the availability of alternative suppliers and the level of competitive intensity, might serve as alternative loss-avoidance considerations An enlarged set of distributor motivations would provide more actionable implications for managers

Second, further research should directly gauge distributors' loss-avoidance versus rent-seeking motivations using perceptual measures In addition, a multistage survey in which these motivations are measured at different times would enable a more direct and detailed examination of distributors' changing motives These methodological advancements could help further validate and extend the research findings

Third, to examine the network effect, we use data about the level of peer distributors' participation, as perceived by the focal distributor Additional research should explore more complex interactions between individual motivations and network characteristics, such as the effects of network density and interconnectedness among channel members In addition, network centrality (i e , the relative position of the focal distributor) may moderate distributor motives and is of interest to both researchers and managers

Fourth, we use a real-life event as the research context Other methods, including behavioral experimentation and longitudinal studies, are needed to complement the findings and unpack interesting theoretical perspectives on this challenging topic

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Rik Pieters, Michel Wedel, & Rajeev Batra

The Stopping Power of Advertising: Measures and Effects of Visual Complexity

Advertising needs to capture consumers' attention in likable ways, and the visual complexity of advertising plays a central role in this regard Yet ideas about visual complexity effects conflict, and objective measures of complexity are rare The authors distinguish two types of visual complexity, differentiate them from the difficulty of comprehending advertising, and propose objective measures for each Advertisements are visually complex when they contain dense perceptual features ("feature complexity") and/or when they have an elaborate creative design ("design complexity") An analysis of 249 advertisements that were tested with eye-tracking shows that, as the authors hypothesize, feature complexity hurts attention to the brand and attitude toward the ad, whereas design complexity helps attention to both the pictorial and the advertisement as a whole, its comprehensibility, and attitude toward the ad This is important because design complexity is under direct control of the advertiser The proposed measures can be readily adopted to assess the visual complexity of advertising, and the findings can be used to improve the stopping power of advertisements

Keywords attention, complexity, advertising, eye-tracking, stopping power

Advertising needs to stop consumers and hold their attention in likable ways "Where the eye stops, the sale begins "[1] Because of rising media noise due to competing advertisements and active ad avoidance by consumers, it has become increasingly challenging for firms to attain this goal To increase the stopping power of advertising, one school in advertising emphasizes simplicity (Aitchinson 1999, Book and Schick 1997), this school advises advertisers to "always use professional-looking, clutter-free design "[2] The idea here is that complexity hurts advertising because it makes people pay less attention to the brand and ad message and, in general, is disliked Another school in advertising endorses complexity because it "slows down the reader, making things more difficult to take in" (Nelson 1985, p 115, see also Chamblee et al 1993, Putrevu, Tan, and Lord 2004), this school advises advertisers to "forget minimalist Web design cluttered pages aren't that bad "[3] The idea here is that complexity helps advertising because it makes people stop and pay more attention to the brand and message, and people may like the challenge in accomplishing this The verdict regarding whether ad complexity hurts or helps the stopping power of advertising is still out, however

Academic research has examined visual complexity effects on attitudes and other downstream effects under forced, long exposures (Cox and Cox 1988, McQuarrie and Mick 1996, Peracchio and Meyers-Levy 1994) but has not established its attention effects In addition, such research has used a multiplicity of definitions and subjective measures of complexity (Geissler, Zinkhan, and Watson 2006, Macklin, Bruvold, and Shea 1985, Morrison and Dainoff 1972, Oliva et al 2005), which hampers generalization The growing research stream on attention to advertising (Fox et al 1998, Janiszewski 1998, Lohse 1997, Pieters and Wedel 2004) has not yet addressed effects of visual complexity The current study attempts to bridge this gap

We posit that there are two distinct types of visual complexity in advertising, we propose quantitative measures to assess each, and we examine how these predict attention, attitude toward the ad, and comprehensibility Prior research has found that advertising effectiveness critically depends on the match between the processing resources available to the consumer and those demanded by advertising (Anand and Sternthal 1988, Peracchio and Meyers-Levy 2005) Thus, it is important to gauge the resource demands of advertising, and our proposed measures of visual complexity accomplish this Across 249 tested magazine advertisements, we find that an advertisement's feature complexity has a negative effect on brand attention and attitude toward the ad, but an advertisement's design complexity has

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[1] See http //www marketingdirsvc com/MDS/Get_Attention html (last accessed May 21, 2010)

[2] See http //www yellowpageaddesign com/Yellow-Page-Ad-Design-tip-6 html (last accessed February 2010)

[3] See http //www montparnas com/articles/forget-minimalist-web-design-cluttered-pages-aren%E2%80%99t-that-bad/ (last accessed February 2010)

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a positive effect on pictorial attention, ad attention as a whole, and attitude toward the ad Thus, rather than visual complexity having either a positive or a negative effect, we find that design complexity helps advertising attention and likability and that feature complexity hurts it Moreover, we find that both types of visual complexity do not reduce the comprehensibility of the advertisement These findings are important because design complexity is easily controlled by advertisers, and both visual complexity types can be readily assessed with our measures This research contributes to a theory of complexity effects in advertising and offers guidelines for managing visual complexity to raise the stopping power of advertising

Visual Complexity of Advertising

Visual complexity theory (Attneave 1954, Donderi 2006) developed from the idea that most images contain redundancy and that images are more complex to the extent that they contain less redundancy Thus, complexity is a visual characteristic of the ad image, and it is different from the comprehensibility of the ad message, with which it is sometimes confused To date, researchers still lack a clear understanding of how visual complexity can be measured and controlled in advertising, how it differs from an advertisement's comprehensibility, and what its implications are for ad performance We distinguish feature and design complexity of advertising, propose quantitative measures for each, and establish their influence on attention and attitude toward the ad In addition, we differentiate these two visual complexity types from the difficulty of identifying the brand in the advertisement as a prime visual component of an advertisement's comprehensibility

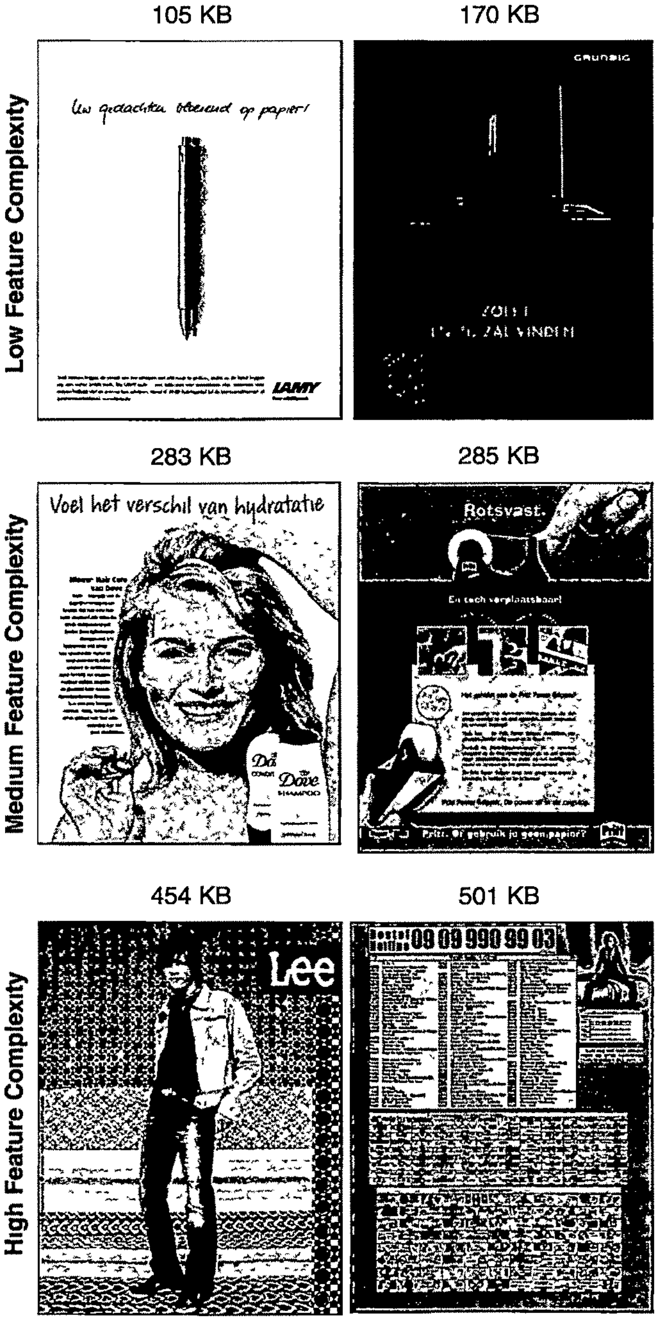
Feature Complexity

Advertisements that contain more detail and variation in their basic visual features, color, luminance, and edges are more complex In a computer image of an advertisement, this type of "raw" or unstructured complexity is reflected in variation at the level of individual pixels Researchers have examined this in computer and vision science under the general labels of "visual complexity" (Donderi 2006, Huhmann 2003) or "visual clutter" (Rosenholz, Li, and Nakano 2007) Because it resides in the basic visual features of the ad image, we label it "feature complexity" The top left advertisement in Figure 1 depicting a black pen against a uniform white background is visually simpler than the middle-left advertisement, which depicts a full-color woman's face with several white and blue packshots of shampoo, because the latter has a more detailed pattern of color, luminance, and edges

The more detail and variation there is in the three basic visual features across an image, the more computer memory is needed to store the image, in turn, this provides a convenient measure of feature complexity The advertisements in Figure 1 are from the empirical application and measure 640 × 845 pixels To code them with 16 7 million possible colors (24 bits) in raw form would require 1622 kilobytes for each Image compression techniques (Shapiro and Stockman 2001) reduce the amount of computer memory needed relative to the original image by stripping an image of its redundancies The JPEG algorithm is a standard for image compression (Wallace 1991) We use JPEG file size as the measure of feature complexity The JPEG algorithm compresses the simple pen advertisement in the top left of Figure 1 to 105 kilobytes (15 1 compression) and the complex retail advertisement in the bottom-right corner to 501 kilobytes (over 3 1 compression) Feature complexity evokes low-level visual processes in the primary visual

FIGURE 1
Feature Complexity of Advertising: Clutter of Visual Features

Feature Complexity Expressed in JPEG File Size (in Kilobytes [KB])



cortex (Palmer 1999), and previous research has shown its influence on perception and behavior (Donderi and McFadden 2005, Rosenholz, Li, and Nakano 2007, Székely and Bates 2000)

Design Complexity

Alternatively, advertisements with more elaborate designs in terms of the shapes, objects, and patterns they contain are also more complex Whereas feature complexity taps the unstructured variation in the visual features of image pixels, design complexity taps the structured variation in terms of specific shapes, objects, and their arrangements in the advertisement Researchers have previously examined this under the general label of "complexity" or "structural complexity" (Arnheim 1954, Berlyne 1958, Cox and Cox 1988) Because it resides in the advertisement's creative design, we call it "design complexity" Decisions about design complexity are fundamental in ad development and under direct control of advertisers and ad agencies

Various principles of design complexity have been independently proposed (Arnheim 1954, Donderi 2006, Palmer 1999, Wertheimer 1923) For example, Attneave (1954) proposed that asymmetry in the shape of objects increases complexity Wertheimer (1923) suggested that dissimilarity between objects in shape, color, or size increases complexity Berlyne (1958) proposed that the number, amount of detail, and irregularities of elements and the irregularity of their arrangement in the image increase complexity We integrate and build on these ideas by identifying six general principles of design complexity Figure 2 presents them with examples from the empirical application

1 *Quantity of objects* Design complexity is higher when the advertisement contains more rather than fewer objects (Kosslyn 1975, Palmer 1999) In Figure 2, the left (simple) advertisement for a pen contains a single product and two text blocks, while the right (complex) advertisement for cutlery contains multiple products and text blocks

2 *Irregularity of objects* Design complexity is greater when the objects in the advertisement are irregularly rather than regularly shaped Regularly shaped objects contain symmetry along one or more axes, a gestalt principle that simplifies object and pattern perception (Berlyne 1958, Palmer 1999) In Figure 2, the left (simple) advertisement contains regularly shaped cans of vegetables, while the right (complex) advertisement contains an irregularly shaped object a person with a bow and arrow

3 *Dissimilarity of objects* Design complexity is greater when the objects in the advertisement are dissimilar rather than similar in shapes, textures, orientations, and/or colors Similarity is a gestalt principle that simplifies object and pattern perception (Wertheimer 1923) In Figure 2, the left (simple) advertisement shows six similarly shaped caps of an alcoholic beverage bottle, while the right (complex) advertisement pictures differently shaped packages and products for deep-frying and the fries

4 *Detail of objects* Design complexity is greater when the objects in the advertisement have more rather than less detail in terms of fine edges, intricate textures, or color variations (Berlyne 1958) This principle is similar to feature complexity, but it is assessed at the level of objects, not the ad image as a whole In Figure 2, the left (simple) furniture advertisement portrays a single outline of a plastic box, while the right (complex) clothing advertisement portrays a model wearing an intricately patterned blouse

5 *Asymmetry of object arrangement* Design complexity is greater when the objects in the advertisement form asymmetric rather than symmetric arrangements This reflects the gestalt principle of symmetry at the level of the ad layout rather than at the level of individual objects (Wertheimer 1923) The left (simple) advertisement in Figure 2 is symmetric and shows a car approaching a T-section toward the horizon, while the right (complex) advertisement is asymmetric and pictures a dominant bottle of a dairy drink left of the vertical median

6 *Irregularity of object arrangement*, Design complexity is greater when the objects in the advertisement form an irregular rather than a regular pattern, with the extreme being a random distribution of objects across space (Berlyne 1958, Donderi 2006) The left (simple) advertisement in Figure 2 contains two dominant rows of shoes that are regularly arranged, while the right (complex) furniture advertisement contains various differently shaped products in an irregular arrangement

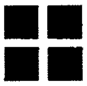
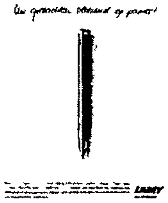
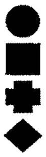
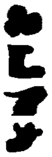
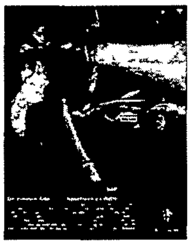
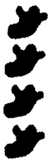
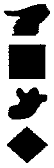
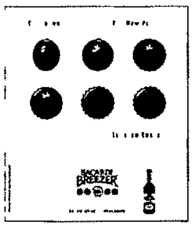
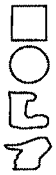
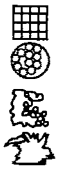
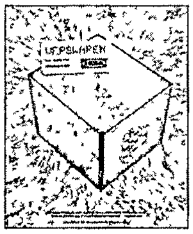
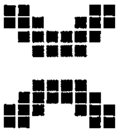
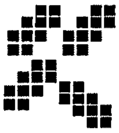
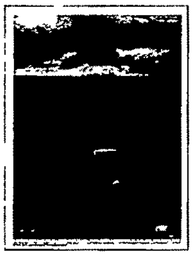
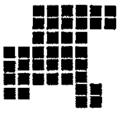
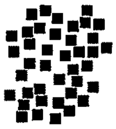
Because each of the six principles independently raises complexity, we can obtain an overall index of design complexity by summing them (Diamantopoulos and Winklhofer 2001) Design complexity evokes midlevel visual processes of object and pattern perception (Palmer 1999), and specific aspects of it have previously been shown to influence perception and behavior (Berlyne 1958, 1974, Cox and Cox 1988, Donderi 2006, Peracchio and Meyers-Levy 1994, 2005)

Brand Identification Difficulty

The complexity and comprehensibility of advertisements are distinct constructs That is, the image of an advertisement can be visually simple or complex, independent of whether the message of the advertisement is easy or complicated to understand Not only has some prior research treated complexity and comprehensibility as interchangeable constructs (Cox and Cox 1988, Oliva et al 2005), but measures of the constructs may also be naturally correlated in a particular set of advertisements Thus, it is relevant to distinguish the complexity and comprehensibility of advertisements and control for the latter when testing the effects of the former We concentrate on a visual determinant of ad comprehensibility, namely, the ease or difficulty of identifying the advertised brand That is, to comprehend an advertisement, consumers need to identify the advertised brand and accurately process the message about it The comprehension literature has examined accurate message processing (Jacoby and Hoyer 1989, Mick 1992) but not the ease or difficulty with which consumers can identify the advertised brand (i e , brand identifiability) Brand identifiability reflects a midlevel visual process (Palmer 1999) because the brand—as the target object—needs to be found in the advertisement to process information about it, and the latter is a high-level cognitive process

Brand identifiability is under the advertiser's control and is a key consideration in ad design (Book and Schick 1997, Nelson 1985, Pieters and Wedel 2004) As a case in point, Moriarty (1986, p 291) argues that "the most important thing to remember in national advertising is to focus on

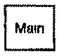
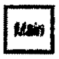
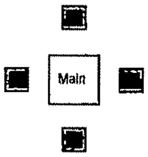
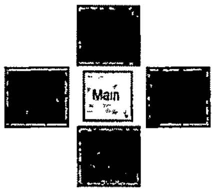
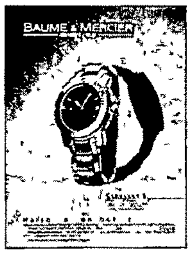
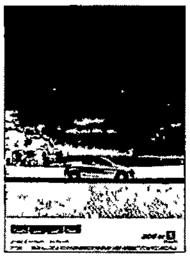
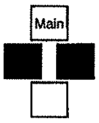
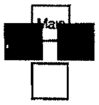
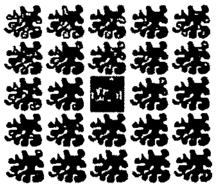
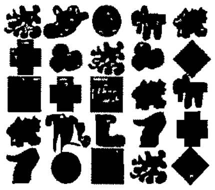
FIGURE 2
Design Complexity in Advertising: Six Principles

	Design Complexity		Sample Advertisement	
Principle	Low	High	Simple	Complex
Quantity of objects: number of objects is small or large (many = complex)				
Irregularity of objects: shape of objects is regular or irregular from symmetry along one or more axes (irregular = complex)				
Dissimilarity of objects: shape, color, texture, orientation of objects are similar or dissimilar (dissimilar = complex)				
Detail of objects: objects have less or more visual detail from color, edges, texture (detail = complex)				
Asymmetry of object arrangement: spatial arrangement of objects is symmetric or asymmetric (asymmetric = complex)				
Irregularity of object arrangement: spatial arrangement of objects is regular or irregular (irregular = complex)				

identification of the brand.” Figure 3 presents four general principles of ad design that reduce brand identifiability, independent of the ad space devoted to the brand.

1. *Low brand contrast.* Brands are more difficult to identify when their contrast with other objects and the background in the advertisement is low rather than high because of blurred contours or small luminance differences (Palmer 1999; Rubin [1921] 2000). In Figure 3, the left advertisement for frozen vegetables has sharp contours and high figure–ground contrast, which makes the brand easy to identify, while the right advertisement has more soft-focus contours and uniform luminance.
2. *Small relative brand size.* Independent of their absolute size in the advertisement, branded products are more difficult to identify when their size relative to other objects or to the background is small (Kosslyn 1975). Large competing objects draw attention and hamper easy identification of the brand because it appears to be smaller. The left advertisement in Figure 3 contains a life-size picture of only a watch, which stands out and makes the brand easier to identify, while the left advertisement contains a small picture of a car against a desert background and open sky.
3. *Brand masking.* Brands are more difficult to identify when they are masked rather than isolated and complete (Rosenholz, Li, and Nakano 2007). Masking may occur as a result of occlusion by other objects, overlaps, cutouts, and cropping at the borders (Arnheim 1954; Peracchio and Meyers-Levy 1994). Masked objects are more likely perceived as part of the background, which complicates their identification. The left advertisement in Figure 3 contains a complete packshot of a box of cigarettes, while the right advertisement contains a pictorial of a “cropped” man in the target underwear, which is partly occluded by the woman’s leg. This makes brand identification difficult.

FIGURE 3
Difficulty of Brand Identification in Advertising: Four Principles

Principle	Difficulty of Brand Identification Low	 High	Sample Advertisement Easy	 Difficult
Low brand contrast: brand stands out or blends in from blurring or low luminance contrast (low = difficult)				Ken jij de geheime adresjes van modestylistes?
Small relative brand size: brand is large or small relative to other objects (small = difficult)				
Brand masking: brand is complete or incomplete from masking, occlusion, cropping, cutouts (masked = difficult)				
Heterogeneity of brand background: brand background is homogeneous or heterogeneous (heterogeneous = difficult)				

4 *Heterogeneity of brand background* Brands are more difficult to identify when the background is dense and heterogeneous rather than sparse and homogeneous (Duncan and Humphreys 1988, Pieters, Wedel, and Zhang 2007) The left advertisement in Figure 3 shows a person wearing the advertised brand of jeans against a homogeneous background, which makes the brand easier to identify, while the right advertisement shows a heterogeneously populated cartoon scene with various shapes and colors, which makes the advertised brand of sportswear more difficult to discern

We obtain an overall index of brand identifiability by summing across the four principles (Diamantopoulos and Winklhofer 2001) Because each principle reduces brand identifiability, we reverse-score the final index so that higher scores indicate better brand identifiability To date, marketing research on the effects of brand identifiability principles has been scarce

Hypotheses

We test the influence of visual complexity and brand identifiability on attention to the advertisement as a whole, to the brand, and to the pictorial and text in the advertisement, as well as on ad comprehensibility and attitude toward the ad We predict that feature and design complexity have distinct effects that differ from those of brand identifiability Specifically, we expect the following

H_1 Feature complexity has a negative effect on (a) attention to the brand in the advertisement, (b) attention to the advertisement as a whole, and (c) attitude toward the ad

Images high in feature complexity are visually cluttered, which hinders people in locating specific objects in them (Donderi and McFadden 2005, Rosenholz, Li, and Nakano 2007) Advertisements high in feature complexity divert people from carefully looking at the brand, which reduces attention to the advertisement as a whole (Pieters, Wedel, and Zhang 2007) Because the brand receives less attention, people cannot easily determine what the advertisement is for and thus like it less In general, the processing load caused by high levels of visual clutter should be liked less because consumers' motivation and ability to process information are low under normal ad-viewing conditions (Anand and Sternthal 1988) Because feature complexity evokes low-level visual processes, we do not hypothesize an effect on ad comprehensibility With respect to design complexity, we predict the following

H_2 Design complexity has a positive effect on (a) attention to the pictorial in the advertisement, (b) attention to the advertisement as a whole, and (c) attitude toward the ad

Whereas simple designs activate habitual object and pattern perception processes, more complex designs are expected to be more engaging and likable (Palmer 1999) Berlyne (1958, 1974) calls this the collative or "glueing" property of images, which has aesthetic qualities Because the design complexity of advertisements mostly resides in the pictorial rather than in the brand or text, people should pay more attention to the pictorial, which will raise attention to the advertisement as a whole Because the complex pictorial is more engaging, people are also expected to like the advertisement more

Prior advertising research has reported inverted U-shaped effects, such that attention and attitude were highest at intermediate levels of complexity and lower at the extremes (e g , Geissler, Zinkhan, and Watson 2006, Morrison and Dainoff 1972) The idea is that deviations from some optimal level of complexity are either insufficiently or overly challenging, which hurts attention and attitudes However, some of this research has used subjective measures of complexity that include items such as "simple–complicated" The finding that attention and attitude are lowest at the extremes of such a complexity spectrum is difficult to interpret because the terms "simple" and "complicated" are both evaluatively negative and, furthermore, complexity need not be "complicated" In light of the previous findings, we explore possible inverted U-shaped effects of feature and design complexity, but we do not hypothesize that such effects are present with our new measures In addition, because design complexity evokes midlevel perceptual processes and does not raise visual clutter, we do not hypothesize that it influences ad comprehensibility With respect to identifiability of the brand, we predict the following

H_3 Difficulty of identifying the brand has a negative effect on (a) attention to the brand in the advertisement, (b) attention to the advertisement as a whole, and (c) ad comprehensibility

Rather than stimulating increased attention, which might occur under high levels of motivation or under forced exposures, it is likely that the difficulty of identifying the brand reduces attention to the brand and, thus, to the advertisement as a whole under the low levels of motivation during self-paced ad exposure Difficulty of identifying the advertised brand hinders information acquisition and processing of the brand This has a negative effect on ad comprehensibility We do not hypothesize an effect of brand identification difficulty on attitude toward the ad, in view of Peracchio and Meyers-Levy's (1994) findings that attitudinal effects of cropping and similar principles were absent under low motivation conditions

Joint support for these hypotheses would reveal that rather than visual complexity being either good or bad, feature complexity hurts and design complexity helps attention to and attitude toward the ad It would further show that the difficulty of identifying the brand, a related but different visual property of advertisements, hurts ad attention and comprehensibility

Data and Analyses

Data

Data are available for a representative, random sample of 249 full-page advertisements appearing in general-interest consumer magazines (Figures 1 and 2 show examples of the advertisements) The information for each advertisement consists of (1) feature complexity (JPEG file size), design complexity, and brand identifiability (coded by a panel of three trained judges), (2) attention to the brand, pictorial, text, and advertisement as a whole (average gaze durations across approximately 100 regular consumers for each advertisement), (3) attitude toward the ad and ad comprehensibility (based on a panel of 12 trained judges), (4) control variables, including sizes of brand, pictorial and text in the advertisements (obtained with graphical software), and brand and ad familiarity (scored by 10 judges), and (5) experienced complexity of ad design and difficulty of identifying the brand (based on two separate samples of approximately 100 participants each) We use the two variables in the fifth category to validate the proposed measures of visual complexity and brand identifiability These variables are included as columns in two separate data sets with advertisements times participants as rows All other variables are included as columns in the final data set with the advertisements as rows Table 1 provides summary statistics for this final data set

The market research company Verify International provided attention data collected with infrared eye-tracking (Wedel and Pieters 2008) on 249 advertisements from 35 tests conducted in 2002, each with more than 100 participants representing the general population over 18 years of age Thus, the attention data for the current study are based on more than 3500 participants Participants were instructed as follows "Page through several magazines that are presented on the monitor You can do this at your own pace, as you would do at home or in a waiting room" Next, the advertisements were shown with the editorial counterpage from the magazine in which they appeared, in the sequence in which they appeared (four magazines per test) Instructions and stimuli were presented on 21-inch LCD monitors in full-color bitmaps with a 1280 × 1024 maximum pixel resolution Participants continued to a next page by touching the lower-right corner of the touch-sensitive screen, as when paging The task, stimuli, and context reflect ordinary ad exposure situations The company provided the average gaze duration for each advertisement as a whole and for the brand, the pictorial, and the text in the advertisement Before the analyses, gaze durations were log-transformed

Bitmaps of 640 × 845 pixels of all 249 advertisements were available in JPEG format The log-JPEG file size in kilobytes (Donderi and McFadden 2005, Rosenholz, Li, and Nakano 2007) of the ad images is our measure of feature complexity of advertising Three trained judges manually coded design complexity and brand identifiability in terms of the presence (1) or absence (0) of each of the six design complexity principles (Figure 2) in the 249 advertisements The modal response across coders (0/1) for each principle was assigned to each advertisement (α = 76) The measure of ad design complexity was calculated as the average of the six principles for each advertisement, to arrive at a proportion between 0 and 1 Brand identifiability was similarly coded on the basis of its four principles (Figure 3), and the measure was calculated as the average of the four principles for each advertisement, to arrive at a proportion between 0 and 1 This score was reversed so that higher scores indicate better brand identifiability

We obtained measures of ad comprehensibility and attitude from a separate panel of 12 trained judges (6 male and 6 female research assistants) Items were rated on five-point response scales ranging from "completely disagree" (1) to "completely agree" (5) We assessed ad comprehensibility with three items "Overall, this ad is " (1) "difficult to comprehend," (2) "complicated," and (3) "unclear" Scores were reversed so that higher values express increased ad comprehensibility We assessed attitude toward the ad with four items "Overall, this ad is " (1) "attractive," (2) "useful," (3) "entertaining," and (4) "good" We computed average scores across judges and items (α = 84 and 76, respectively)

TABLE 1
Summary Statistics for Advertising Data

Measures	M	SD	Minimum	Maximum
A Objective Measures				
1 Feature complexity (JPEG file size in kilobytes)	284 12	63 79	105	501
2 Design complexity (proportion 0 = low, 1 = high)	33	20	00	1 00
3 Brand identifiability (proportion 0 = low, 1 = high)	79	19	25	1 00
B. Ratings				
1 Ad comprehensibility (1 = low, 5 = high)	4 01	55	2 22	5 00
2 Attitude toward the ad (1 = negative, 5 = positive)	3 16	43	2 04	4 25
C. Attention				
1 Brand (seconds)	47	33	01	1 83
2 Pictorial (seconds)	1 04	44	02	2 96
3 Text (seconds)	1 06	59	01	4 42
4 Advertisement as a whole (seconds)	2 12	66	71	6 54
D. Control Variables				
1 Brand space (proportion of total ad size)	10	06	01	39
2 Pictorial space (proportion of total ad size)	62	25	01	1 00
3 Text space (proportion of total ad size)	28	16	01	75
4 Brand familiarity (0 = unknown, 1 = known)	78	41	00	1 00
5 Ad familiarity (1 = low, 5 = high)	2 17	82	00	4 67

Notes Based on N = 249 advertisements Attention duration for the advertisement as a whole is not the exact sum of attention to the separate ad elements, because attention to overlapping ad elements is assigned to both Raw JPEG file size is shown, log-file size is used in the analyses

We obtained information about control variables as follows We determined the brand, pictorial, and text space (as a proportion of total ad space) using standard graphical software Brand familiarity (0 = low, and 1 = high) and ad familiarity ("This specific ad for the brand is familiar to me," where 1 = "not at all" and 5 = "completely") were scored by a separate panel of ten judges (5 male and 5 female judges, both α = 75)

Validation

To validate the measures of visual complexity and brand identifiability, the 249 advertisements were rated by two samples of 104 (M_{age} = 21 7, 63% male) and 102 (M_{age} = 21 6, 44% male) undergraduate students Advertisements were presented in random order on computer monitors, and participants responded by clicking on the appropriate response For each advertisement, the first sample responded to the item "This ad design is " on a five-point scale ranging from "very simple" (1) to "very complex" (5) The average was 3 00 (SD = 1 00, across 104 participants and 249 advertisements) The second sample indicated the following for each advertisement "How easy or difficult is it to detect the advertised brand?" on a five-point scale ranging from "very easy" (1) to "very difficult" (5) The average was 2 71 (SD = 1 31, across 102 participants and 249 advertisements) In this second sample, we also recorded response latencies as the time between start of an ad exposure and response to the question for each advertisement and participant (mean latency 2 29 seconds, SD = 2 13)

We analyzed the validation data using multilevel regression analyses with full heterogeneity across participants in all coefficients We estimated models with experienced complexity (104 participants) and experienced difficulty of brand identification (102 participants) as the dependent variables ($y_{i,j}$) and with measures of feature and design complexity and brand identifiability as the independent variables ($x_{i,j}$) The sizes of the three ad elements and brand and ad familiarity were control variables We estimated models for individuals i = 1, , N, advertisements j = 1, , J, and p = 1, , P independent variables

$$
\text{(1)} \qquad \begin{aligned} y_{i,j} &= x'_{i,j}\beta_i + \varepsilon_{i,j} \\ \beta_{i,p} &\sim N\left(\bar{\beta}_p,\ \sigma^2_{\beta,p}\right), \end{aligned}
$$

where the parameter vector $\beta_i = (\beta_{i,p})$ is individual specific and $\varepsilon_{i,j} \sim N(0, \sigma_y{}^2)$ We estimated models with the Gibbs sampler (Gill 2008), with standard noninformative prior distributions, using 15,000 draws with a burn-in of 5000 We present the posterior mean and posterior standard deviation of the posterior distributions of the parameters

The results (see Table 2) support the validity of the proposed measures Higher levels of feature complexity (M = 547, SD = 036) and design complexity (M = 163, SD = 045) raised experienced complexity of the ad design, after we controlled for all other effects Brand identifiability had no effect (M = 095, SD = 076) In addition, lower levels of brand identifiability increased the experienced difficulty of finding the advertised brand (M = – 558, SD = 047) Feature (M = – 064, SD = 037) and design (M = 069, SD = 037) complexity had no effect

TABLE 2
Determinants of Experienced Complexity and Brand Identification Difficulty

Predictors	**Experienced Complexity of Ad Design**	**Experienced Difficulty of Brand Identification**
Constant	– 313 (184)	**3.325 (204)**
Brand space (0, , 1)	029 (139)	**–2.140 (.262)**
Pictorial space (0, , 1)	026 (056)	**–.387 (.053)**
Text space (0, , 1)	**.959 (.160)**	**1.792 (.155)**
Brand familiarity (0, 1)	– 025 (017)	**–.155 (.023)**
Ad familiarity (1, , 5)	**–.065 (.009)**	**–.117 (.017)**
Feature complexity (log-JPEG)	**.547 (.036)**	– 064 (037)
Design complexity (0, , 1)	**.163 (.045)**	069 (037)
Brand identifiability (0, , 1)	095 (076)	**–.558 (.047)**
Heterogeneity constant (u)	302 (056)	970 (154)
Heterogeneity residual (e)	1 007 (009)	1 017 (009)
Ad level R^2	13 9%	20 7%

Notes N advertisements = 249 N participants = 104 for "experienced complexity of ad design," and N participants = 102 for "experienced difficulty of brand identification" The standard deviations of the parameter estimates are in parentheses Bold estimates are significant at 5%

An additional regression analysis (not shown) revealed that, as we expected, higher levels of brand identifiability led to a faster response to the question of how easy or difficult the brand can be identified (log-latency) (M = – 112, SD = 015), after we controlled for all other effects Brand familiarity (M = – 049, SD = 008) and feature complexity (M = – 064, SD = 016) led to faster responses, and larger surface sizes of the pictorial (M = 105, SD = 020) and text (M = 234, SD = 041) led to slower responses, with no other effects significant This supports the validity of the visual complexity and brand identifiability measures

Analyses

To establish the effects of visual complexity and brand identifability on attention, we use a multivariate multilevel regression model with a random intercept to control for differences between the 35 tests (there is no reason to expect other parameters to be heterogeneous across the 35 tests) We specify the model for the (1 × Q) vector of gaze durations, $Y_{j,t}$, for advertisements j = 1, , J and tests t = 1, , T, as follows

$$
\text{(2)} \qquad \begin{aligned} \log\left(Y_{j,t}\right) &= \beta_{0,t} + x'_{j,t}B + E_{j,t} \\ \beta_{0,t} &\sim N\left(\bar{\beta}_0,\ \Sigma_\beta\right) \end{aligned},
$$

where $B = (\beta_{p,q})$ is the (P × Q) parameter matrix and $E_{j,t} \sim N(0, \Sigma_y)$ is the (1 × Q)-residual vector We estimated additional multivariate regression models to examine the influence of predictors on ad comprehensibility and attitude toward the ad We estimated all models with the Gibbs sampler (Gill 2008) with noninformative conjugate prior distributions We use a burn-in of 5000 and present the posterior mean and posterior standard deviation of the posterior distributions of the estimates across 15,000 target draws

Results

Feature complexity (JPEG file size) ranged from a minimum of 105 kilobytes for the pen advertisement at the top left of Figure 1 to a maximum of 501 kilobytes for the retail advertisement at the bottom right of Figure 1 The shampoo and stationary advertisements in the middle of Figure 1 were closest to the average of 284 kilobytes These JPEG file sizes are based on images of 640 × 845 pixels, measures for images with other dimensions may differ On average, design complexity was 33%, ranging from a minimum of 0%, for example, for the pen advertisement at the top left of Figure 2 to a maximum of 100% for the furniture advertisement at the bottom right of Figure 2 Finally, on average, brand identifiability was 79%, ranging from a minimum of 25% for the sportswear advertisement at the bottom right of Figure 3 to a maximum of 100% for the frozen vegetables advertisement at the top left of Figure 3

Correlations between the measures of visual complexity and brand identifiability are modest This indicates that they largely tap different constructs, as was our intention Feature complexity shares approximately 16% of variance with design complexity (r = 390, p < 05) and 5% with brand identifiability (r = – 232, p < 05), and design complexity and brand identifiability share 4% (r = – 212, p < 05)

Effects on Attention to Advertising

In support of H_{1a}, feature complexity reduces attention to the brand (M = – 473, SD = 205), as we show in Table 3 This reflects the detrimental effects of increased visual clutter in the ad image The decrement in brand attention is too small to translate into an overall ad attention decrement, which is counter to H_{1b}

In support of H_{2a}, design complexity increases attention to the pictorial (M = 682, SD = 161) This reflects the collative properties of this type of complexity In support of H_{2b}, the net effect of design complexity on attention to the advertisement as a whole is positive as well (M = 260, SD = 095)

Brand identifiability does not significantly influence brand and ad attention, which disconfirms H_{3a} and H_{3b} As in practice, attention to the brand in the advertisement was limited to begin with—an average of 470 milliseconds, or approximately two eye fixations Thus, reduced brand identifiability may not be able to decrease brand attention further because of a floor effect Yet the validation data point to another possibility They showed that reduced brand identifiability led participants to experience greater difficulty in identifying the brand, but it also led to longer response latencies in responding to this question Taken together, the validation and attention data indicate that reduced brand identifiability increased the time before participants found the brand but did not result in reduced attention after they found it This finding makes the observed detrimental effect of feature complexity on brand attention even more telling

To explore potential nonlinear and interaction effects, we added the products of feature and design complexity and their second-order polynomials (after mean-centering) to the regression models for brand, pictorial, and text attention and for the advertisement as a whole None of the parameter estimates were substantively meaningful and significant Thus, we cannot reject the hypothesis that across the large set of regular advertisements, the effects of visual complexity on attention were linear and additive

Effect on Ad Comprehensibility and Attitude Toward the Ad

Table 4 shows that increased levels of feature complexity hurt attitude toward the ad (M = – 318, SD = 136), confirming H_{1c} This reveals the importance of preventing visual clutter in advertisements In contrast, increased levels of design complexity help attitude toward the ad (M = 276, SD = 131), confirming H_{2c} Design complexity improves

TABLE 3
Complexity Effects on Attention to Advertising

	Attention			
Predictors	**Brand**	**Pictorial**	**Text**	**Overall Ad Attention**
Constant	1 044 (996)	**–2.290 (.807)**	– 323 (1 116)	170 (482)
Brand space (0, , 1)	**8.087 (.626)**	**1.455 (.509)**	– 174 (702)	344 (300)
Pictorial space (0, , 1)	140 (231)	**1.334 (.188)**	– 096 (259)	– 103 (112)
Text space (0, , 1)	– 175 (423)	– 227 (342)	2 762 (474)	279 (202)
Brand familiarity (0, 1)	*– 189 (096)*	025 (078)	103 (108)	– 004 (046)
Ad familiarity (1, , 5)	– 071 (052)	– 018 (043)	**–.237 (.059)**	**–.082 (.025)**
Feature complexity (log-JPEG)	**–.473 (.205)**	191 (166)	– 008 (229)	105 (099)
Design complexity (0, , 1)	154 (197)	**682 (.161)**	081 (222)	**.260 (.095)**
Brand identifiability (0, , 1)	– 010 (050)	– 019 (041)	091 (057)	025 (097)
Heterogeneity constant (u)	001 (009)	015 (010)	011 (015)	005 (004)
Heterogeneity residual (e)	308 (029)	195 (019)	380 (036)	069 (007)
Ad level R^2	42 4%	42 0%	41 4%	19 8%

Notes N = 249 The standard deviations of the parameter estimates are in parentheses Bold estimates are significant at 5%, and italicized estimates are significant at 10%

TABLE 4
Complexity Effects on Ad Comprehensibility and Attitude

Predictors	Ad Compre-hensibility	Attitude Toward the Ad
Constant	**4.353 (.902)**	**4.671 (661)**
Brand space (0, , 1)	**1.604 (.570)**	− 453 (418)
Pictorial space (0, , 1)	345 (209)	**.410 (.155)**
Text space (0, , 1)	177 (384)	− 535 (284)
Brand familiarity (0, 1)	− 004 (087)	118 (065)
Ad familiarity (1, , 5)	**.183 (.047)**	018 (035)
Feature complexity (log-JPEG)	− 206 (185)	**−.318 (.136)**
Design complexity (0, , 1)	**.400 (.178)**	**.276 (.131)**
Brand identifiability (0, , 1)	**.643 (.181)**	067 (134)
Heterogeneity residual (e)	252 (023)	137 (013)
Covariance between residuals	068 (013)	—
Ad level R^2	17 7%	26 3%

Notes N = 249 The standard deviations of the parameter estimates are in parentheses Bold estimates are significant at 5%

ad comprehensibility as well (M = 400, SD = 178), which we did not hypothesize Confirming H_{3c}, higher brand identifiability improves ad comprehensibility (M = 643, SD = 181) The reduced time to find the brand when brand identifiability is high (as revealed by the validation data) may lead participants to experience the advertisement as more comprehensible This positive effect of brand identifiability is independent of the already positive effect of ad familiarity (M = 183, SD = 047) and increases in the sheer size of the brand (M = 1 604, SD = 570) on ad comprehensibility This shows that independent of the sheer size of the brand in the advertisement, creative techniques that increase brand–background contrast in the advertisement help ad comprehensibility

Quadratic effects of feature complexity, design complexity, and brand identifiability were not significant, so we cannot reject the hypotheses that their effects on attitude toward the ad and comprehensibility are linear Furthermore, we conducted a Bayesian mediation analysis (Zhang, Wedel, and Pieters 2009) A challenge in classic mediation analyses is to obtain standard errors of the mediated effect and of the total effect of the independent variable and, thus, valid significance tests of these effects An advantage of the Bayesian estimation of mediation models is that it allows computation of the standard error of these effects in a straightforward manner, even for small samples The analysis reveals that attention to the pictorial mediates the effects of design complexity on ad comprehensibility ($M_{\text{pictorial attention}}$ = 155, SD = 074, $M_{\text{design complexity}}$ = 292, SD = 185) and attitude toward the ad ($M_{\text{pictorial attention}}$ = 150, SD = 053, $M_{\text{design complexity}}$ = 167, SD = 132) Attention did not mediate the effect of feature complexity on attitude toward the ad (there was no effect on ad comprehensibility)

Conclusion and Implications

This research provides an answer to the question whether visual complexity helps or hurts advertising performance Rather than higher levels of visual complexity being either harmful or helpful, we identified two distinct types of visual complexity with divergent effects on advertising performance Feature complexity is the density of visual detail in the advertisement in terms of color, luminance, and edges It hurts brand attention and attitude toward the ad Design complexity is the intricacy of the creative design of the advertisement in terms of its shapes, objects, and organization It helps attention to the pictorial and to the advertisement as a whole, ad comprehensibility, and attitude toward the ad These findings are important because design complexity is under direct control of advertising creatives, agencies, and advertisers In addition, we proposed and found that visual complexity is distinct from brand identifiability (i e, the difficulty or ease of identifying the advertised brand) Increased difficulty of identifying the advertised brand harmed ad comprehensibility Jointly, this reveals that complex advertisements need not be complicated and that the question whether visual complexity harms or helps advertising performance critically depends on where the complexity resides the features or the design of the advertisement Feature complexity harms and design complexity helps ad performance

We proposed measures to assess feature complexity, design complexity, and brand identifiability and established their validity Feature complexity is captured by the file size of the JPEG-compressed visual image of the advertisement The measure is broadly available and reflects the amount of visual clutter in the image We captured design complexity and brand identifability through manually coded measures that can be readily implemented using the proposed methodology

Implications for Advertising Planning

This research is the first to document the harmful effects of feature complexity in advertisements The positive attention effect of this type of visual clutter has long been a subject of speculation, but instead of slowing "down the reader, making things more difficult to take in" (Nelson 1985, p 115), feature complexity actually reduced attention to the brand and attitude toward the ad Stuffing the advertising image with much visual detail is harmful and prevents people from paying attention to the brand in the advertisement At first, the finding that feature complexity reduced attention to the brand seems to conflict with Donderi and McFadden's (2005) finding that visual clutter increased the time to find a target object in images of graphs and charts In their study, people were explicitly instructed to search for a target and to stop only when they accomplished this objective In practice, and as reflected in our data, processing resources are limited, and attention to the brand is low and drops further when advertisements are cluttered This occurs because people do not look at the brand at all if they cannot find it fast enough or look at it only briefly when they do find it because featural complexity distracts or prevents them from paying attention longer Because attention to the advertised brand plays a crucial role in building subsequent brand memory (Wedel and Pieters 2000), reduced brand attention can have long-term detrimental effects for brand equity On the basis of these findings, we recommend a reduction of feature-based clutter in advertisements whenever possible [4] This is particularly important in environments with high attention competition, such as in the *Yellow Pages*, retail, and newspaper advertising, as well as in media contexts with brief exposure durations, such as outdoor and point-of-purchase advertising

Recently, Pracejus, Olsen, and O'Guinn (2006) observed that advertisements with much "white space" led to more positive brand attitudes We explain their observation by showing that it may not be the amount of white space per se but rather the lack of clutter in the ad image that is vital because advertisements with more white space tend to have lower feature complexity, and this improves attitudes Note that one of the least cluttered advertisements in our sample was largely black (the top-right advertisement in Figure 1), so "black space" may have a similar effect Increasing the amount of white space is only one way to reduce visual clutter Reducing visual clutter can be achieved in various ways and can be checked easily according to the file size of the images of the ad prototypes

The design complexity effects we found support Berlyne's (1958, 1974) ideas about the collative ("glueing") effects of visual complexity on attention and liking He argues that visual complexity has aesthetic qualities and is engaging, and he finds that people look longer at more complex abstract line drawings The findings in the current study show that across many advertised products and brands, design complexity helps attention to the pictorial in advertisements and, thus, the advertisement as a whole, independent of feature-based visual clutter, size of the pictorial, brand identifiability, and ad and brand familiarity The attentional benefit of design complexity is specific to the ad element in which it mostly resides, namely, the pictorial, which translates into attention to the advertisement as a whole Design complexity also improved ad comprehensibility and attitude toward the ad It raised the aesthetic qualities and "well-formedness" of advertisements and was, in this case literally, "in the eye of the beholder," as reflected in longer pictorial attention Thus, the recommendation to use visually complex ad designs to stop consumers and retain attention in likable ways is warranted This is particularly important in communication situations in which advertisements need to be visually appealing, such as in thematic magazine advertising, here, paying attention to pictorials, perceiving them as comprehensible, and having a positive attitude toward them will improve ad effectiveness

The measure of design complexity and its six principles can be used in advertising planning and to benchmark design complexity relative to other advertisements On average, advertisements in our sample used two of the six principles of design complexity, with 13% using none, 20% using one, 29% using two, 29% using three, and 8% using four or more This empirical distribution of levels of complexity can be used as a benchmark in creative ad design In the current results, each principle increased pictorial attention by a factor 1 120 and ad attention as a whole by 1 044 Attention to the pictorial was a little more than one second, and attention to the advertisement as a whole was a little more than two seconds, which is representative of exposure durations in real-life situations (Pieters and Wedel 2004) We predict that including all six design complexity principles should almost double pictorial attention to close to two seconds and increase attention to the advertisement by approximately 30%, or more than two-and-a-half seconds In addition, it should improve ad comprehensibility and attitude toward the ad

The measure of design complexity gives ad designers control over the creative process by offering ideas on the complexity principles to include in their advertisements and feedback about the effects of their ad concepts before any costly concept testing or pretesting on samples of consumers has taken place This should reduce turnaround times and help further improve advertising effectiveness at a low cost The measure may also be used, for example, to set maximum and/or minimum desirable levels of visual complexity for certain advertisements, brands, or communication contexts The finding that feature complexity hurts ad processing and effectiveness should sensitize ad designers to increase design complexity, while keeping feature-based visual clutter at a minimum

Advertisements with less space devoted to the brand were less comprehensible, in addition, those in which brand identification was difficult were considered less comprehensible These findings extend prior findings on ad comprehension (Jacoby and Hoyer 1989, Mick 1992) Knowing which brand is advertised conveys vital information to consumers about the personal relevance of the advertisement and which information to expect and extract from it The current research is the first to document the effect of brand identifiability on ad comprehension Advertisements with brands that are difficult to identify are considered less comprehensible but not more complex Thus, when advertisements need to be rapidly comprehensible, the recommendation to "play the brand front and center" (Moriarty 1986, p 291) is warranted

Future Directions

The visual complexity framework and measures are relevant for other communication stimuli and media, including Web sites and product packages, and we encourage their future application to those areas Levels of visual complexity and difficulty of brand identification are likely to be much higher for Web sites than for magazine advertisements Web sites commonly contain multiple messages, sometimes for different brands, each with their own design and content that, at the same time, collaborate and compete for consumers' attention It might be expected that visual complexity effects are even more dramatic in such highly competitive contexts The proposed measures may quantify and help optimize complexity and brand identifiability to improve communication performance

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[4] See http //www yellowpageaddesign com/Yellow-Page-Ad-Design-tip-6 html (last accessed February 2010)

Likewise, package designs need to communicate quickly in competitive store environments For example, consider the following designer's experience "So I'm at the wine section of my local grocery store and as I stood there looking at all the labels trying to scream for my attention, I realized that large, simple shapes took over Labels that either used white space the best, or used a very identifiable image on the front seemed to jump forward That doesn't mean that they necessarily looked upscale, or were positioned correctly for their target market, but it did make them noticeable Sometimes, less really is more"[5] Further research could test these and similar ideas about complexity effects on package design performance using the presented complexity framework and measures If the findings generalize to Web sites and packages, here too they should be uncluttered and complex, but not complicated, to have likable stopping power

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[5] See http //nowdesign blogspot com/2009/08/visual-clutter html (last accessed February 2010)

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Son K. Lam, Florian Kraus, & Michael Ahearne

The Diffusion of Market Orientation Throughout the Organization: A Social Learning Theory Perspective

This study examines the diffusion of market orientation (MO) as a social learning process to acquire and transfer individual-level MO Central to the diffusion are important work-group members, or envoys Through their market-oriented action, top managers serve as market-oriented role models to two important types of observers in work groups—formal middle managers and work-group expert peers In turn, these observers become top managers' envoys and role models of market-oriented behavior to frontline employees Empirical results from a three-level data set from a *Fortune* 500 company support this perspective While envoys who are neither market oriented nor identified with the firm are the least effective, envoys who are not market oriented but are strongly identified with the firm are also detrimental Network size hinders the informal route of learning through expert peers but not the formal route through middle managers By identifying who the important work-group envoys are and under what conditions certain envoys are likely to be most effective, this study helps managers select the best envoys to implement MO

Keywords market orientation, customer orientation, internal marketing, organizational identification, middle management, multilevel modeling

Market orientation (MO), the organizational culture that provides strong norms for learning from customers and competitors, is instrumental in creating superior value for buyers, innovating successfully, and generating superior firm performance (Day 1994, Gatignon and Xuereb 1997, Kirca, Jayachandran, and Bearden 2005, Narver and Slater 1990, Noble, Sinha, and Kumar 2002, Slater and Narver 1995) Therefore, it is not surprising that a large body of literature on the antecedents of MO has accumulated Although research on MO antecedents and consequences has greatly advanced in the past two decades and provides useful insights, three limitations warrant further investigation

First, the prevalent research design has been a between-firm analysis, with an emphasis on organizational-level determinants of how market oriented a firm should be Although Slater and Narver (1995) called for a more fine-grained perspective of MO implementation more than a decade ago, there has been little individual-level research exploring how top management can diffuse MO to each organizational member and across organizational levels (e g , Hartline, Maxham, and McKee 2000)

Second, previous research has reported that top management commitment is the strongest predictor of MO (Kirca, Jayachandran, and Bearden 2005) and that work-group socialization is critical in the dissemination of customer-oriented strategy to customer-contact employees (Hartline, Maxham, and McKee 2000) However, the literature has not identified who in the work groups are the important people top management can rely on to diffuse MO to lower-level organizational members, such as frontline employees We refer to these people as "envoys" in the diffusion of MO

Third, the literature suggests that there can be more than one type of envoy in work groups to diffuse MO For example, in addition to middle managers with formal power, coworkers with informal power may also influence frontline employees' behavior (e g , Chiaburu and Harrison 2008, Kohli and Jaworski 1994) The question, then, is under which condition an envoy's role may become more or less important Such an understanding is important because it enables top managers to (1) channel their message to frontline employees effectively and (2) select alternative envoys (e g , expert peers in lieu of middle managers) to implement, increase, and sustain MO even if one type of envoy fails

Social learning theory (Bandura 1977) suggests that individual behavior is determined by both the environment and a person's motivation to learn proactively from important social referents We integrate Slater and Narver's (1995) conceptualization of MO as market-driven learning and social learning theory to propose a mesocontingency

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model (House, Rouseau, and Thomas-Hunt 1995) of MO diffusion First, we propose an individual-level MO (IMO) concept that captures an organizational member's three market-driven orientations—namely, customer, competitor, and product orientations Second, we identify two alternative envoys—middle managers and experts within work groups—who play a key role in helping top managers diffuse MO to frontline employees Unlike middle managers, who possess formal power, work-group experts possess informal power and therefore can exert strong influence on frontline employees (Morrison 1993, Yukl and Falbe 1991) We view MO diffusion as a social learning process in which these envoys develop their IMO by learning from top managers and then serve as formal and informal role models of IMO behavior to frontline employees Finally, we investigate the moderating effects of two important characteristics of the MO envoys The first factor is the envoy's orientation toward the organization, or organizational identification (OI), because an envoy can be market oriented but not organizationally oriented The second factor is the size of the network in which these envoys are embedded because network size may dilute or facilitate the social interaction underlying the learning-based MO diffusion process

We test our conceptual framework using a multisource data set that includes 43 top managers, 285 middle-level sales managers, and 1528 sales representatives of a large U S company We find that the diffusion of MO flows indirectly from top management to frontline employees through middle managers and expert peers rather than directly Moreover, the envoys' identification with the firm consistently enhances the transfer processes from both middle managers and expert peers Finally, network size hinders the informal route of learning through expert peers but not the formal route through middle managers

This study contributes to the literature on MO in several ways First, this study extends the current understanding of MO implementation by identifying important envoys in the diffusion of MO and the conditions under which their importance may be compromised or enhanced In doing so, we depart from previous research that views MO diffusion as a top-down process and take a more interactive approach that accounts for the characteristics of middle and lower echelons and the work group Second, the findings reveal a disturbing reality that organizational members can be highly market oriented without being highly organizationally oriented Finally, we demonstrate that the two routes of MO diffusion do not operate exactly in the same way This study also informs top managers how to select an effective envoy to implement MO Specifically, we demonstrate that middle managers who do not identify with the organization become roadblocks to MO diffusion When this happens, expert peers in work groups may be an alternative if top managers are aware of the contingencies of these experts' influence on others

We organize the rest of this article as follows We begin by briefly reviewing social learning theory and introducing the IMO construct Then, we present the conceptual framework, research hypotheses, and the empirical study Finally, we conclude with a discussion of the findings, theoretical and managerial implications, and future research avenues

MO Diffusion: A Social Learning Theory Perspective

Slater and Narver (1995) underscore the importance of fine-grained research that examines individual and group market-driven learning processes In this regard, social learning theory (Bandura 1977) proposes two types of individual learning reinforcement learning and vicarious learning On the one hand, people learn from the consequences of their behavior (i e , reinforcement), thus, they are likely to increase (decrease) the frequency of behavior that has resulted in positive (negative) consequences This is also referred to as experiential learning (Huber 1996) On the other hand, people can engage in vicarious learning by observing others before engaging in a particular behavior because doing so enables them to avoid needless and costly errors (Bandura 1977, Manz and Sims 1981) Drawing from these insights, we conceptualize MO as an individual-level construct and propose an MO diffusion framework from a social learning theory perspective In doing so, we recognize that organizational-level learning theories offer a more comprehensive discussion of learning processes (e g , Huber 1996, Sinkula 1994), but we rely mainly on Bandura's (1977) individual-level learning theory because of its relevance to the context and the level of analysis in this study

MO as an Individual-Level Construct

In this study, we conceptualize MO as an individual-level construct Following recent developments in the MO literature (Gatignon and Xuereb 1997, Noble, Sinha, and Kumar 2002, Voss and Voss 2000) and research on customer orientation (Brown et al 2002, Hartline, Maxham, and McKee 2000, Saxe and Weitz 1982), we define IMO as an organizational member's practice of integrating customer preferences, competitor intelligence, and product knowledge into the process of creating and delivering superior value to customers This practice corresponds to three types of market-driven learning customer orientation, competitor orientation, and product orientation [1] This individual-level conceptualization of MO is consistent with the level of analysis that is prevalent in the literature on customer orientation, competitive intelligence, and salesperson knowledge (e g , Brown et al 2002, Saxe and Weitz 1982) This body of research suggests that there are significant variations across organizational members in terms of their market-driven learning In this study, we attribute these differences to social learning processes that take place across different levels in an organization

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[1] Early work on organizational-level MO (Narver and Slater 1990) has also considered interfunctional coordination as part of the MO concept However, recent research on MO (Gatignon and Xuereb 1997, Voss and Voss 2000) has treated it as an organizational structure variable that is conceptually distinct from the three strategic orientations and is part of the formal organizational arrangements For within-firm analyses, such as the current study, this organization-level variable should be the same across individuals and should be excluded in the IMO conceptualization In addition, product orientation refers to knowledge about both the product itself and services

MO Diffusion as Social Learning to Transfer IMO

Social learning theory (Bandura 1977) suggests that MO does not evolve in a social vacuum Rather, frontline employees undergo experiential and vicarious learning from role models or social referents in their organization, who we refer to as envoys (Manz and Sims 1981, Weiss 1977) In this vein, recent research by Hartline, Maxham, and McKee (2000) suggests that work-group socialization is the major corridor of influence in the dissemination of customer orientation from top management to frontline employees Among multiple information sources in work groups, middle managers and work-group expert peers are the most important

Middle managers are extremely important in marketing strategy implementation because they serve as linking pins between the top managers to whom they report and the frontline employees who they directly supervise (Floyd and Wooldridge 1992, Likert 1961, Noble and Mokwa 1999) Recent research suggests that work-group peers, especially expert peers, also exert a strong, informal influence on coworkers' attitude and behavior even when leaders' influences are taken into account (Chiaburu and Harrison 2008, Kohli and Jaworski 1994, Morrison 1993) While middle managers possess positional power over frontline employees (that expert peers lack), expert peers possess personal power over frontline employees, stemming from their expertise and proximity, which middle managers might not necessarily have In other words, it is possible that both middle managers and expert peers serve as role models who frontline employees observe and from whom frontline employees learn to develop IMO In turn, these role models, both formal and informal, also develop their IMO by way of learning from their superiors

While social learning occurring through formal middle managers is a proximal learning process (top managers → middle managers → sales representatives), social learning through expert peers reflects a distant learning process (top managers → expert peers → sales representatives) because expert peers do not directly report to top managers Although this distant learning process is theoretically viable (Waldman and Yammarino 1999), it has not received much academic attention We collectively refer to these learning processes as the diffusion of MO

Research Hypotheses

In this section, we formally derive testable hypotheses For the purpose of this research, we consider frontline sales representatives the focal employees We use the terms "leaders" and "supervisors" and the terms "followers" and "subordinates" interchangeably Figure 1 describes the theorization of MO diffusion as a social learning phenomenon, such that top management's IMO (Level 3 role models) indirectly influences sales representatives' IMO (Level 1 observers) through two routes or two types of envoys middle managers and expert sales representatives as expert coworkers (Level 2 observers and role models to Level 1 observers)

Different Routes of MO Diffusion

Formal envoy of the diffusion of MO middle managers From the top down, leaders who are highly market oriented use their positional power to create measurements, rewards, and punishments to exert normative influence on their immediate followers As a result, followers become more market oriented This social learning is consistent with operant theory in that followers develop IMO behavior because of directly experienced consequences (e g , Skinner 1953) In support, previous research has found that a market-based evaluation and reward system is the strongest driver of MO (Jaworski and Kohli 1993, p 61)

Followers' learning can also take place vicariously Social learning theorists have argued that "vicarious, imitative learning seems to better explain the rapid transference of behavior than does the tedious selective reinforcement of each discriminable response" (Davis and Luthans 1980, p 283) Such vicarious learning occurs by observing role models in work groups By observing the outcomes of their role models' behavior, observers form outcome expectancies of similar behavior and thus develop a propensity to engage in or avoid certain behavior Leaders play an important role in followers' role set and are likely to serve as role models for followers to emulate (Waldman and Yammarino 1999) Leaders who are high in IMO are likely to exhibit behaviors that are consistent with this market-driven orientation and therefore will facilitate followers' market-driven learning (e g , Manz and Sims 1981, Weiss 1977) Applying this social learning theory approach to MO to the relationship between leaders and followers—namely, the top manager–middle manager and middle manager–sales representative interfaces—we hypothesize the following cascading effect

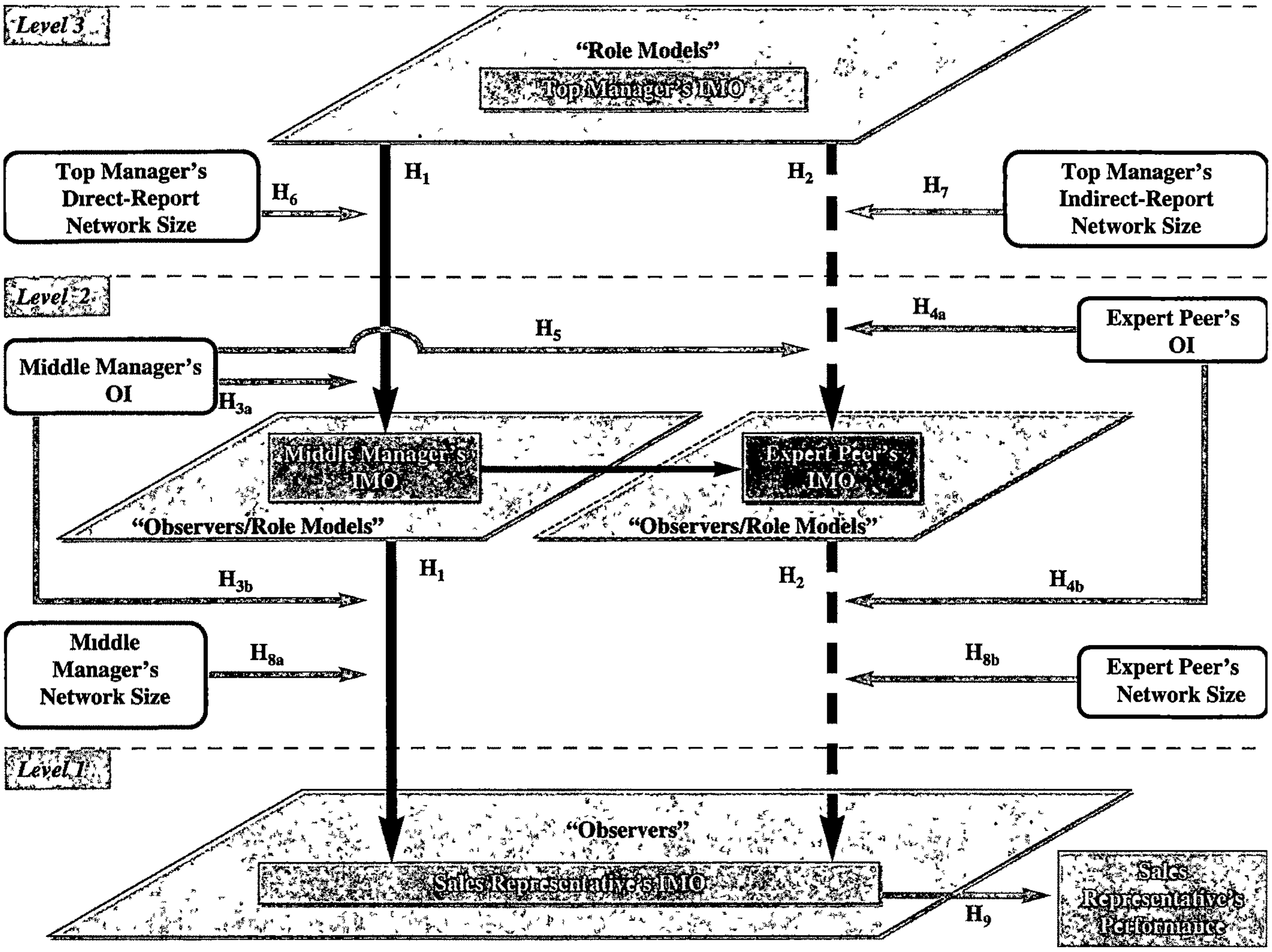
> H_1 Top managers' IMO positively influences middle managers' IMO, which in turn positively influences the IMO of sales representatives, including the expert peer

Informal envoy of the diffusion of MO expert peers In explaining the implications of vicarious learning for organizational behavior, Davis and Luthans (1980, p 284) posit that "job descriptions, rules, and policies are more likely to be interpreted from watching what others do than following written directives " This viewpoint, which is consistent with the social information theory perspective (Salancik and Pfeffer 1978), suggests that frontline employees vicariously learn not only from leaders but also from work-group peers In a recent review of the literature on peer influence in work groups, Chiaburu and Harrison (2008) argue that because employees are likely to interact more frequently with their coworkers than with their leader, coworkers can exert unique influences on their peers even when leader influences are controlled As we mentioned previously, we focus on expert peers in the group Following previous work on social bases of power (French and Raven 1959), we define expert peers in work groups as those who possess the knowledge to carry out the focal task most efficiently

In a boundary-spanning environment, expert peers are valuable sources of information from whom other peers in the work group can learn By observing the successes and

FIGURE 1

Conceptual Framework of MO Diffusion as Social Learning to Transfer IMO Across Organizational Levels



Notes The bold arrow on the left represents the formal, proximal learning route The dotted arrow on the right reflects the informal, distal learning route of MO diffusion from top management The moderating effects predicted in H_{3b} and H_{8a} also apply to the middle manager–expert peer interface, but we do not draw these effects in this figure to avoid clusters

failures of these experts, sales representatives can adjust their behavior accordingly without being imposed on by an organization-level normative influence Consequently, expert peers who are high in IMO influence their coworkers to learn more about customers, competition, and company products In other words, because high-IMO expert peers are more likely to be successful, they possess referent and expert power that other workers learn from and try to imitate

However, as frontline employees, expert peers are also subject to their leaders' influence Previous research has suggested that top management can directly influence followers at lower echelons of the organization, bypassing the middle echelons (Shamir 1995, Waldman and Yammarino 1999) We further argue that top management exerts direct influence on some, but not all, frontline employees Specifically, top management exerts direct influence on the frontline experts The reasons for this are twofold First, leader-member exchange theory (Dansereau, Graen, and Haga 1975) suggests that top managers are constrained by limited resources and are unable to engage in equally strong relationships with all followers To achieve high efficiency, top managers will selectively interact more with influential members at lower echelons, such as expert peers Second, expert peers should be more capable of correctly attributing top managers' successes and failures to specific market-driven behaviors These two conditions put expert peers in a better position than other frontline employees to engage in both forms of social learning from top managers Combining the argument related to the expert peer–sales representative interface and the rationale for H_1, we hypothesize the following

> H_2 Top managers' IMO positively influences expert peers' IMO, which in turn positively influences sales representatives' IMO

Slater and Narver (1995, p 63) posit that "the cultural values of [MO] are necessary, but not sufficient, for the creation of a learning organization" They propose that situational factors may contribute to the learning process. In the same vein, social learning theory suggests that learning is not independent of context and that people are both selective and proactive in what they observe and from whom they learn (Bandura 1977; Davis and Luthans 1980). Next, we focus on two boundary conditions that are critical in MO diffusion: envoys' OI and network size.

Synergistic Effects of Outside-In and Inside-Out Marketing: The Moderating Role of OI

Market orientation has been conceptualized as outside-in marketing to identify and satisfy customer needs more effectively than competitors (Day 1994; Jaworski and Kohli 1993; Narver and Slater 1990). There are several reasons to believe that IMO (as market-driven learning) and orientation toward the organization might not be aligned. First, customers represent only one type of external stakeholder (Deshpandé, Farley, and Webster 1993; Narver and Slater 1990). In the pursuit of customer loyalty, many firms neglect building relationships with the internal customers even though internal customers' bonding with the organization is related to external customers' loyalty (Berry, Hensel, and Burke 1976; Maxham, Netemeyer, and Lichtenstein 2008). Second, research on middle managers suggests that a manager's self-interest is not always aligned with the firm's interests (Guth and MacMillan 1986). For example, some managers who are sensitive to external publics (i.e., are market oriented) may be egocentric and insensitive to internal publics (i.e., have poor human resource practices). Finally, sales representatives may engage in market-driven learning, such as collecting market intelligence, because they are motivated by self-interest. In support, Le Bon and Merunka (2006) report that salespeople's organizational commitment is not related to market intelligence activities, after controlling for sales representatives' need for recognition and promotion opportunities.

Research on internal marketing argues that "internal marketing paves the way for external marketing" (Berry and Parasuraman 1992, p. 33). Internal marketing was originally defined as the activities pertaining to "making available internal products (jobs) that satisfy the needs of a vital internal market (employees) while satisfying the objectives of the organization" (Berry, Hensel, and Burke 1976, p. 11). Subsequent developments in the internal marketing literature further emphasized the criticality of organizational values and a clear vision that organizational members consider worth pursuing (Berry and Parasuraman 1992). Recent research (e.g., Wieseke et al. 2009) suggests that internal marketing can be viewed as a process of building OI, defined as the extent to which organizational members perceive oneness with the organization (Ashforth and Mael 1989).

On the envoy-as-learner side, research on OI suggests that the transfer of IMO from leaders (i.e., role models) to followers (i.e., learners) is greatly enhanced if the learners are high in OI. This synergistic effect occurs for at least two reasons. First, followers who identify strongly with the organization consider the successes and failures of the organization their own (Mael and Ashforth 1992). Therefore, they tend to pay close attention to the consequences of the activities in which the organization, including its top management, engages. This facilitates vicarious learning. Second, followers who identify with the organization are more likely to engage in activities beneficial to the organization and to conform to group norms and values (Ashforth and Mael 1989; Riketta 2005). They believe that organizational rewards and punishments are instrumental in maintaining and promoting a strong organizational identity. This facilitates their receptivity to reinforcement learning.

On the envoy-as-role-model side, if the envoy strongly identifies with the organization, he or she will become more prototypical of the organization. Previous research has suggested that people are more likely to conform to and learn from prototypical organizational members (Van Knippenberg, Lossie, and Wilke 1994). Therefore, followers who work under or with high-OI envoys should be more receptive to the envoys' influences, including learning to be market oriented. Thus, we hypothesize the following:

> H_3: The higher a middle manager's OI, the stronger is the transfer of IMO (a) from the top manager to the middle manager and (b) from the middle manager to the sales representatives, including the expert peer.
>
> H_4: The higher an expert peer's OI, the stronger is the transfer of IMO (a) from the top manager to the expert peer and (b) from the expert peer to the other sales representatives.

We mentioned that top managers can implement MO through both the formal route of middle managers and the informal route of expert peers. However, when middle managers identify strongly with the organization, they will exhibit organizational behaviors that set good examples for their followers, including the expert peers. Their OI-induced prototypicality coupled with their positional power over the frontline employees should make them a better and more natural choice for top managers to instill IMO behavior in frontline employees than the expert peers, who lack positional power to be appealing to other peers as role models.

When middle managers do not identify strongly with the organization, they become less prototypical of the organization and do not actively engage in behavior to ensure the organization is on track. When this happens, expert peers will likely use the next level of management, top managers, as better role models to learn from than middle managers. Top managers who try to transfer IMO behavior downward to frontline employees will also likely engage in more interaction with expert peers to make up for the middle manager's lack of effort. This will enhance the informal route of MO diffusion through which experts learn directly from top managers. Thus, we predict the following:

> H_5: The weaker a middle manager's OI, the stronger is the transfer of IMO from the top manager to the expert peer.

Moderating Effect of Network Size

The envoys' OI captures his or her motivation to learn from superiors and transfer that knowledge to subordinates and peers. Reinforcement and vicarious social learning is also contingent on the size of the envoys' network because of its influence on the social interaction between observers and role models. For the purpose of this research, we define network size as the maximum number of organizational members who have a structural link, of either a superior–subordinate or a peer-to-peer nature, to a focal person This focal person can be a top manager, a middle manager, or an expert peer For each top manager, we examine two types of networks a network of middle managers who directly report to the top manager (direct-report network) and a network of sales representatives who work in the territories for which the top manager is responsible (indirect-report network) For each middle manager and expert peer, the network size is the size of the work group (a sales district) under a specific middle manager's control

As a top manager's direct-report network size increases, the social interaction between the top manager as a role model and the middle managers as observers will be less frequent Social learning through vicarious observation is crippled if the opportunity to directly observe role models is less frequent In contrast, when the network size is small, interpersonal interaction will be more frequent, making vicarious learning less costly, in terms of both time and effort (Erickson 1988) In support of this, previous research has found that supervisors working with smaller groups have more time and opportunity for coaching, feedback, and interacting with subordinates (Ford 1981, Porter and Lawler 1964) In other words, a large direct-report network may weaken the transfer of IMO from top managers to middle managers A similar argument is applicable for the top managers' indirect-report network size for the top manager–expert peer interface

However, as the size of the direct- and indirect-report network increases, managers might be more likely to enforce more formalization of rewards and punishments (Kipnis and Lane 1962) This strengthens reinforcement learning, countervailing its negative effect on vicarious learning Nevertheless, because the development of IMO is a complex learning process and "vicarious observational learning accounts for the acquisition of complex patterns of social behavior more readily than does the isolated reinforcement of discrete behavioral responses" (Davis and Luthans 1980, p 283, see also Bandura 1977), a larger network size is likely to dampen the IMO diffusion from top managers to middle managers and to expert peers Therefore, we hypothesize the following

H_6 The larger the top manager's direct-report network, the weaker is the transfer of IMO from the top manager to the middle manager

H_7 The larger the top manager's indirect-report network, the weaker is the transfer of IMO from the top manager to the expert peer

The same argument is applicable to the transfer of IMO from middle managers to frontline employees If the number of frontline employees who work under a manager is too large (i e , large span of control), the social interaction between the middle manager as a role model and frontline employees as learners/observers will become less personal and less frequent (e g , Urwick 1956) This results in fewer opportunities for frontline employees to engage in observational vicarious learning

Similarly, when the work-group network is too large, frontline employees will have less of a chance to interact with expert peers Furthermore, as the size of the work group increases, differentiation of responsibilities in the work group will be more likely (Blau 1970), expertise may be distributed across multiple group members rather than residing with a particular person Informal cliques are more likely to form in larger networks (Tichy 1973), which is inducive to conflicts and tensions among group members As a result, frontline employees working in larger work groups will have fewer opportunities or will be too occupied with conflict resolution to engage in vicarious learning from expert peers Thus, we hypothesize the following

H_8 The larger the sales district's network, the weaker is the transfer of IMO (a) from the middle manager to the sales representatives, including the expert peer, and (b) from the expert peer to the other sales representatives

Consequences of the Transfer of IMO

At the individual level, customer-oriented salespeople do not always perform better even when the selling situations do not call for it (Saxe and Weitz 1982) Franke and Park's (2006) meta-analysis shows that the relationship between customer orientation and objective performance is nonsignificant In addition, Armstrong and Collopy (1996) demonstrate that the sole reliance on competitor orientation is detrimental to performance because competitor orientation leads to suboptimal strategies to beat competition while losing sight of profit maximization

However, market-oriented sales representatives practice not only customer orientation but also competitor and product orientations Market-oriented salespeople engage in customer-oriented behaviors aimed at increasing long-term customer satisfaction and avoid behaviors that might result in customer dissatisfaction (Saxe and Weitz 1982) However, satisfied customers still defect (Jones and Sasser 1995) Some empirical evidence suggests that though frontline employees' customer orientation is indirectly related to customer behavioral outcomes through both customer satisfaction and value, value is a much stronger driver of customer outcomes (Brady and Cronin 2001) Market-oriented salespeople create value for customers because, with their mastery of product knowledge, they are able to identify which products and services will better solve customers' problems Because they are competitor oriented, they will be aware of the strengths and weaknesses of current and potential competitors in their assigned territory (e g , Narver and Slater 1990) This competitive intelligence will help them communicate the value proposition to their customers in a more balanced and persuasive manner In other words, market-oriented salespeople are able to achieve higher performance because they practice the marketing concept to satisfy customers' needs more effectively and efficiently than competitors by means of their profound knowledge about the product and the competitive landscape Therefore, we hypothesize the following

H_9 A sales representative's IMO is positively related to his or her performance

Method

Data Collection

Research context. We collected data from the sales force of a U.S.-based *Fortune* 500 company in the cleaning and sanitizing industry. The study context is a typical sales organizational structure, exhibiting a close sales manager–salesperson and sales director–sales manager relationship as well as frequent fellow salesperson interactions in a sales district. In the context of this study, we use the term "sales directors" to refer to top managers and the term "sales managers" to refer to middle managers. Furthermore, as is typical in a sales setting, top performers are widely recognized in the firm. Intensive field interviews with middle managers and top managers of the firm confirmed that outstanding salespeople were well known to sales directors. These top performers and sales directors interacted frequently to exchange ideas and experiences, even though there was no formal, direct reporting. The research setting also exhibits features of a decentralized firm with geographically dispersed sales districts, each led by a sales manager. These sales managers have a certain degree of freedom with respect to decisions and guiding selling approaches in their district. Other industries, such as insurance companies, banks and financial service providers, pharmaceutical firms, tourism companies, and retailers (e.g., clothing, computer hardware), also have these features.

Data source. This study is based on a four-source data set. We obtained data from sales representatives, sales managers, and sales directors, as well as objective firm data on the individual salesperson's sales performance. We distributed questionnaires to 43 sales directors, 302 sales managers, and 2290 sales representatives. To test the expert peers' influence hypothesis as well as the cross-level hypotheses regarding the top manager–sales manager–sales representatives interface, we matched responses from these three sources using individual code numbers. The final data include 43 sales directors (100% response rate), 285 sales managers (94% response rate), and 1528 sales representatives (67% response rate). Additional tests showed no significant differences between the responses from early and late respondents on all the major constructs and on the key demographic variables, suggesting that nonresponse bias is not a problem in the data (Armstrong and Overton 1977).

Measures

We measured IMO by adapting the MO measurement from Voss and Voss (2000) because their conceptualization is applicable to sales and services environments and captures the nuances initially included in the MO conceptualization (see Kohli, Jaworski, and Kumar 1993; Narver and Slater 1990). Specific to the sales context, we added four additional items, drawn from Thomas, Soutar, and Ryan's (2001) short form of Saxe and Weitz's (1982) selling orientation–customer orientation scale, to the customer orientation dimension at the sales representative level (see Appendix A). We used slightly different customer orientation scales for sales representatives and managers because customer orientation has a broader scope for management, whereas sales representatives' customer orientation mainly pertains to the direct interaction with the customer. To calculate an IMO composite score, we used the mean score of all dimensions. This was justified by high convergent validity in confirmatory factor analysis.

To identify the expert peer in each sales district, we first calculated a formative composite by averaging the z-scores of each sales representative's experience, product knowledge, and sales numbers as a percentage of his or her budget. This measure captured not only the knowledgeability of a peer but also his or her efficiency in using the resources at hand. We selected the sales representative that scored the highest on this composite in each sales district as the expert peer.

We measured the OI of sales directors, sales managers, and sales representatives using Mael and Ashforth's (1992) well-established six-item scale. To control for common method bias and social desirability in self-report studies (Podsakoff et al. 2003), we measured sales representatives' performance using the company's year-on-year growth percentage of total sales per salesperson achieved in the month we conducted the survey. We measured network size using data from the company's organization chart. For sales directors, indirect-report network size includes all sales representatives working in the regions under each director's management, and direct-report network size is the number of sales managers in all the regions under the sales director's management. For sales managers and expert peers, network size refletcs the number of sales representatives working in each sales manager's sales district.

In addition to the predictors in our multilevel framework, the influence of other factors on a person's IMO is possible. Thus, we included several within-level and cross-level control variables in the empirical analyses to test the robustness of the proposed relationships while controlling for important extraneous influences. We controlled for the direct within-level influence of OI and perceived competitive intensity on sales managers', expert peers', and other sales representatives' IMO. Furthermore, we added the mean level of sales representatives' IMO in each sales district and the mean level of sales managers' IMO in each sales region as controls for the MO climate because it might also influence social learning.

Appendix A provides a complete list of measurement items used in the study. Table 1 displays the descriptive statistics, internal consistency reliabilities, and intercorrelations of all study variables. The reliability indexes indicated that the construct measures were psychometrically sound. More specifically, for all constructs, no coefficient alpha values were lower than .70, and average variance extracted was greater than .50. All constructs also had discriminant validity because the average variance extracted exceeds the squared correlations between all pairs of constructs (Fornell and Larcker 1981).

Analytical Approach

Because several sales managers were nested in a particular sales region led by a sales director and because those sales managers, in turn, supervised several sales representatives grouped in sales districts, the responses from employees

TABLE 1
Means, Standard Deviations, and Intercorrelation Matrix

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Level 3: Sales Directors																
1 D_IMO	(70)															
2 TDR	23**	[a]														
3 TSR	24**	74**	[a]													
4 A_IMO	22**	– 15**	– 06*	[a]												
Level 2· Sales Managers/Expert Peers																
5 SM_IMO	19**	– 05	– 02	35**	(78)											
6 EX_IMO	09**	– 11**	– 11**	18**	20**	(81)										
7 SM_OI	11**	– 06*	– 07*	19**	18**	10**	(72)									
8 EX_OI	08*	– 09**	– 14**	07*	07*	18**	14**	(90)								
9 SM_CI	08*	04	01	20**	19**	06*	08*	03	(81)							
10 EX_CI	03	02	04	10**	09*	18**	04	08*	10**	(72)						
11 SDS	– 05	37**	53**	02	– 03	05	11**	– 03	05	03	[a]					
12 SD_IMO	07*	– 01	– 04	13**	18**	39**	18**	23**	20**	09**	04	[a]				
Level 1. Sales Representatives																
13 SR_IMO	03	02	– 05	06*	17**	32**	17**	10**	03	21**	03	44**	(82)			
14 SR_IOI	02	04	06*	04	03	04	04	46**	01	15**	05	35**	33**	(86)		
15 SR_CI	– 02	05	07*	10**	09**	26**	03	15**	08**	40**	05	27**	25**	13**	(73)	
16 Objective performance	07**	05	01	05	09**	18**	12**	11**	06*	07*	06*	17**	16**	15**	10**	[a]
M	5 59	6 17	34 56	5 70	5 70	5 69	6 32	5 79	5 04	4 64	5 63	5 51	5 51	5 81	4 66	5 04
SD	67	2 29	29 16	21	61	81	71	1 03	1 09	1 03	2 30	39	90	1 02	1 34	2 32
AVE	52	—	—	—	61	71	56	63	70	69	—	—	81	75	70	—

*$p <$ 05 (two-tailed)
**$p <$ 01 (two-tailed)
[a]Constructs are measured by a single item

Notes AVE = average variance extracted, D_IMO = sales directors' IMO, TDR = total number of direct reports/sales managers per sales director, TSR = total number of sales representatives, A_IMO = mean of IMO per region managed by a sales director, SM_IMO = sales managers' IMO, EX_IMO = expert peers' IMO, SM_OI = sales managers' OI, EX_OI = sales representatives' OI, SM_CI = sales managers' perceived competitive intensity, EX_CI = expert peers' perceived competitive intensity, SDS = sales district size, SD_IMO = mean of IMO per sales district, SR_IMO = sales representatives' IMO, SR_OI = sales representatives' OI, and SR_CI = sales representatives' perceived competitive intensity Correlations based on scores disaggregated per employee are below the diagonal (n = 1528), and Cronbach's (1951) internal consistency reliability coefficients appear on the diagonal Objective performance is measured by current year-to-date sales divided by previous years' year-to-date sales, in percentage working in the same region and/or district might be interdependent To account for these dependencies and cross-level effects, we applied hierarchical linear modeling (HLM, Raudenbush and Bryk 2002) We chose full maximum likelihood as the estimation method to compare the model fits across nested models (Raudenbush and Bryk 2002) Finally, to analyze the single-level effects of sales representatives' IMO on their sales performance, we used ordinary least squares regression

To justify the use of higher-level predictors, we ran four null models to determine whether there was significant between-group variation These null models are intercept-only models in which no predictors were specified for higher levels of analysis First, we estimated a null model for Level 1 (sales representatives) to investigate whether systematic between-group variance exists in the criterion variable (sales representatives' IMO) for sales representatives who worked under different sales managers The results indicate that working under different sales managers indeed made a difference in sales representatives' IMO ($\chi^2(284, N = 1528) = 298 4$, $p < 00$) Therefore, the variance to be explained in the criterion variable at Level 1 required another predictor at Level 2

In the second null model for the sales director–sales manager interface, sales managers who worked under different sales directors also showed significant between-group variance in IMO ($\chi^2(42, N = 285) = 93 0$, $p < 00$) The results of the third null model for the sales director–expert peers data indicate that expert peers working in different sales regions and managed by different sales directors exhibited significant between-group variance in IMO ($\chi^2(42, N = 285) = 76 1$, $p < 00$) The fourth null model integrated all three levels to test whether a Level 3 variable (i e , sales directors' IMO) exerts a direct influence on sales representatives' IMO by bypassing the middle managers We found that sales representatives who worked in different sales regions (i e , under different sales directors) showed significant between-group variance in IMO ($\chi^2(42, N = 1528) = 118 63$, $p < 00$), which suggests that a direct infuence of a sales director on sales representatives' IMO in a bypassing manner is possible However, to prove direct or indirect influence, further mediation tests are required, which we report next

Results

We present the estimation results in two tables Table 2 reports the estimation of three models The first two models are two-level models, with sales managers' IMO (Model 1) and expert peers' IMO (Model 2) as dependent variables Model 3 is a three-level model, with sales representatives' IMO as the dependent variable We list the hypothesis being tested in the last column of Table 2 The equations of each of these HLM models appear in Appendix B Some of the hypotheses involve the estimation of a sequence of models, and thus some of the hypotheses appear in more than one row in Table 2 Finally, Table 3 reports the regression model with sales representatives' performance as the dependent variable

Simple Effects: Formal and Informal Envoys of IMO Transfer

The model features a proximal learning effect, in which sales directors' IMO indirectly influences sales representatives' IMO through sales managers' IMO (H_1, solid bold arrow on the left in Figure 1), and a distant learning effect, in which sales directors' IMO indirectly influences all other sales representatives' IMO in the sales district through expert peers' IMO (H_2, dotted arrow on the right in Figure 1) To test whether sales managers' IMO or expert peers' IMO fully mediates the influence of a Level 3 predictor (i e , sales directors' IMO) on sales representatives' IMO at Level 1, we conducted a series of tests that Baron and Kenny (1986) and Mathieu and Taylor (2007) recommend, using a three-level model in HLM First, we tested the direct effect by regressing sales representatives' IMO (Level 1) on sales directors' IMO (Level 3), without controlling for sales managers' or expert peers' IMO (Level 2) The results showed that sales directors' IMO did not exert influence on sales representatives' IMO directly ($\gamma = 03$, not significant [n s]) Second, when we controlled for sales managers' and expert peers' IMO at Level 2, sales directors' IMO (Level 3) did not have a significant direct effect on sales representatives' IMO at Level 1 Consequently, we can rule out the model that goes directly from top managers at Level 3 to nonexpert sales representatives at Level 1, bypassing middle managers at Level 2

Because sales directors' IMO has a significant effect on sales managers' IMO ($\gamma = 16$, $p < 01$, Model 1) and sales managers' IMO significantly influences sales representatives' IMO ($\gamma = 17$, $p < 01$, Model 3) and expert peers' IMO ($\gamma = 13$, $p < 05$, Model 2), we found support for H_1 Similarly, the results support H_2 because sales directors' IMO significantly influences expert peers' IMO ($\gamma = 11$, $p < 05$, Model 2), and in turn, expert peers' IMO significantly influences other sales representatives in the sales district ($\gamma = 35$, $p < 01$, Model 3) Thus, we can conclude that sales directors' IMO influences sales representatives' IMO indirectly through sales managers and expert peers rather than directly

Moderating Effect of Sales Managers' OI

In H_3 and H_5, we predicted various interaction effects between sales managers' OI and the transfer of IMO We illustrate the patterns of the moderating effects of sales managers' OI in Figure 2 First, to test the cross-level interaction effect between sales managers' OI and sales directors' IMO, we ran a two-level model in which, at Level 1, sales managers' IMO was a function of sales managers' OI The slope of the variable sales managers' OI at Level 1 was a function of the sales directors' IMO at Level 2 (see model specification in Appendix B, Model 1) As we predicted in H_{3a}, sales managers' OI strengthens the transfer of IMO from sales directors to sales managers (H_{3a} $\gamma = 15$, $p < 05$, Model 1 and Figure 2, Panel A)

Second, the results show that sales managers' OI positively moderates the within-level effect of sales managers' IMO on expert peers' IMO (H_{3b} $\gamma = 10$, $p < 05$, Model 2) Figure 2, Panel B, depicts the nature of this two-way

TABLE 2
HLM Results

Variable	Model 1: γ (SE)	Model 2: γ (SE)	Model 3: γ (SE)	Hypothesis
Model 1 Top Managers' IMO → Sales Managers' IMO				
Intercept	5 65** (03)			
Controls				
A_IMO	36** (11)			
SM_OI	22** (08)			
SM_CI	10* (05)			
Simple Effects				
D_IMO	16** (03)			H_1
TDR	− 14* (07)			
Interaction Effects				
D_IMO × SM_OI	15* (07)			H_{3a}
D_IMO × TDR	− 02 (03)			H_6
Model 2: Top Managers' IMO and Sales Managers' IMO → Expert Peers' IMO				
Intercept		5 56** (04)		
Controls				
SD_IMO		48** (05)		
EX_OI		29** (08)		
EX_CI		09* (04)		
SM_CI		09* (05)		
Simple Effects				
SM_IMO		13* (06)		H_1
D_IMO		11* (05)		H_2
SM_OI		10* (05)		
SDS		08* (04)		
TSR		− 10* (05)		
Interaction Effects				
SM_IMO × SM_OI		10* (05)		H_{3b}
D_IMO × EX_OI		19** (06)		H_{4a}
D_IMO × SM_OI		− 10** (04)		H_5
D_IMO × TSR		− 09** (04)		H_7
SM_IMO × SDS		01 (02)		H_{8a}
Model 3: Top Managers' IMO, Sales Managers' IMO, Expert Peers' IMO → Sales Representatives' IMO				
Intercept			5 46** (04)	
Controls				
SR_OI			22** (03)	
SR_CI			24** (03)	
SD_IMO			44** (05)	
SM_CI			16* (08)	
EX_CI			10* (05)	
Simple Effects				
D_IMO			02 (03)	
SM_IMO			17** (06)	H_1
EX_IMO			35** (10)	H_2
SM_OI			17* (08)	
EX_OI			21** (09)	
SDS			14* (07)	
Interaction Effects				
SM_IMO × SM_OI			16** (02)	H_{3b}
EX_IMO × EX_OI			14** (02)	H_{4b}
SM_IMO × SDS			09 (08)	H_{8a}
EX_IMO × SDS			− 15** (06)	H_{8b}
Pseudo-R^2	233	285	257	
−2 log-likelihood	817 36	652 59	4528 63	
Change in fit index	21 88** (d f = 2)	25 34** (d f = 5)	188 73** (d f = 4)	

*p < 05
**p < 01

Notes D_IMO = sales directors' IMO, TDR = total number of direct reports/sales managers per sales director, TSR = total number of sales representatives, A_IMO = mean of IMO per region managed by a sales director, SM_IMO = sales managers' IMO, EX_IMO = expert peers' IMO, SM_OI = sales managers' OI, EX_OI = sales representatives' OI, SM_CI = sales managers' perceived competitive intensity, EX_CI = expert peers' perceived competitive intensity, SDS = sales district size, SD_IMO = mean of IMO per sales district, SR_IMO = sales representatives' IMO, SR_OI = sales representatives' OI, and SR_CI = sales representatives' perceived competitive intensity N = 285 (expert peers), 285 (sales managers), and 43 (sales directors) We treated all slope coefficients at Level 1 (Level 2 for Model 3) as fixed because of insignificant between-group variance after including the interaction terms We removed the expert peers' IMO scores from the dependent variable's sample (Model 3) for each sales district when running the HLM regressions

TABLE 3
Regression Results for Sales Representatives' Performance

Predictor	Sales Representatives' IMO → Objective Sales Representatives' Performance (H_9) Step 1 Standardized β (t-Value)	 Step 2 Standardized β (t-Value)	 Step 3 Standardized β (t-Value)
Step 1			
Sales representatives' organizational commitment	16** (4 38)	15* (2 34)	15* (2 33)
Sales representatives' job satisfaction	02 (23)	02 (20)	03 (21)
Sales representatives' sales experience	08 (91)	06 (71)	06 (94)
Step 2			
Sales representatives' OI		11* (2 12)	11* (2 16)
Sales representatives' perceived competitive intensity		07** (2 66)	07** (2 70)
Step 3			
Sales representatives' IMO			16** (3 78)
F-value	6 73**	5 46**	4 56**
R^2	040	058	070
ΔR^2		018**	012**

*$p <$ 05
**$p <$ 01
Notes Objective sales representatives' performance is current year-to-date sales divided by previous year's year-to-date sales

interaction Sales managers' OI also amplifies the IMO transfer process from sales managers to regular sales representatives, as is evident from its positive coefficient (H_{3b} $\gamma =$ 16, $p <$ 01, Model 3) As Figure 2, Panel C, shows, the positive relationship between sales managers' IMO and sales representatives' IMO is stronger when the sales managers identify strongly with the organization

Finally, we found support for the diverging effect of sales managers' OI, implying that it mitigates the transfer of IMO from sales directors to expert peers (H_5 $\gamma = -$ 10, $p <$ 01, Model 2) In accordance with H_5, the weaker the sales managers' OI, the stronger is the impact of the sales directors' IMO on expert peers' IMO (see Figure 2, Panel D)

Moderating Effect of Expert Peers' OI

Table 2 also provides the estimation results for various moderating effects of the expert peers' OI First, to test the cross-level interaction effect with sales directors' IMO, we regressed expert peers' IMO on their OI at Level 1 Then, we modeled the slope of this predictor at Level 1 as a function of the sales directors' IMO at Level 2 (H_{4a} $\gamma =$ 19, $p <$ 01, Model 2) In line with H_{4a}, which posits that expert peers' OI moderates the transfer of IMO from sales directors, Figure 3, Panel A, illustrates that when expert peers identify strongly with the organization, the transfer of sales directors' IMO increases

Second, the interaction effect between expert peers' OI and their IMO on the other sales representatives' IMO was significant (H_{4b} $\gamma =$ 14, $p <$ 01, Model 3) Therefore, the results sypport H_{4b} As Figure 3, Panel B, shows, the relationship between expert peers' IMO and other sales representatives' IMO in the sales district is elevated when the experts exhibit high OI

Moderating Effect of Top Managers' Direct- and Indirect-Report Network Size

We found partial support for the hypotheses regarding the moderating role of direct- and indirect-report network size on the sales directors' IMO transfer More specifically, we found no significant interaction effect between the number of direct reports (i e , sales managers) and sales directors' IMO (H_6 $\gamma = -$ 02, n s , Model 1) Therefore, H_6 is not supported

However, there was a negative interaction effect between sales directors' IMO and the number of indirect reports (i e , total number of subordinate sales representatives) in predicting the expert peers' MO (H_7 $\gamma = -$ 09, $p <$ 01, Model 2) The pattern of this interactive effect is in line with the theoretical reasoning for H_7 As Figure 4, Panel A, shows, when the sales directors manage a small number of sales representatives, expert peers who work under high-IMO sales directors exhibit a higher level of IMO

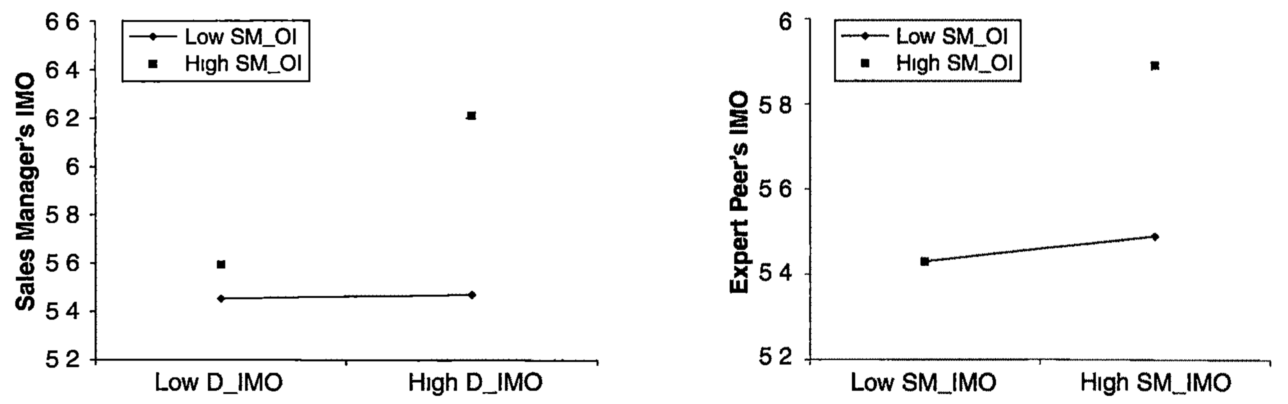
Moderating Effect of the Size of the Sales District Network

We found partial support for our theorization that the number of salespeople in a sales district moderates the transfer of MO Specifically, we did not find support for H_{8a}, which predicted an interaction effect between district size and sales managers' IMO in predicting sales representatives' IMO (H_{8a} $\gamma =$ 09, n s , Model 3) and in predicting expert peers' IMO (H_{8a} $\gamma =$ 01, n s , Model 2) However, we found a significant interaction effect between the expert peers' IMO and the size of the sales district network on the IMO of the other sales representatives in a sales district (H_{8b} $\gamma = -$ 15, $p <$ 01, Model 3) Thus, the result support H_{8b} The interaction plot in Figure 4, Panel B, shows that the effect of expert peers' IMO on the other sales representatives' IMO is weakened if the size of the sales

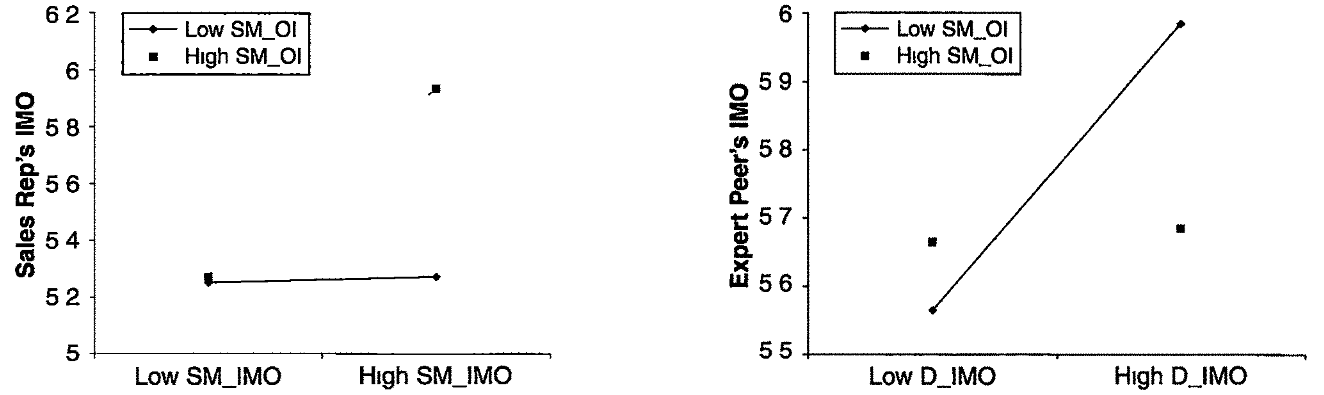
FIGURE 2

Sales Managers' OI as Moderator of IMO Transfer

A: Sales Director–Sales Manager Interface B: Sales Manager–Expert Peer Interface



C: Sales Manager–Sales Representative Interface D: Sales Director–Expert Peer Interface



Notes: SM_OI = sales managers' OI, SM_IMO = sales managers' IMO, and D_IMO = sales directors' IMO.

district network is large, whereas a smaller number of salespeople in a district strengthens the IMO transfer from expert peers to the other sales representatives. The pseudo-R-squares (Snijder and Bosker 1999) in Table 2 show that the variances explained by these predictors were equal to or greater than 20%.

Impact on Sales Representatives' Performance

To show that sales representatives' IMO is positively related to their individual sales performance even when we control for other performance predictors that have been mentioned in the literature, we used hierarchical ordinary least squares regressions. We report the results in Table 3. We first entered the control variables (sales representatives' organizational commitment, job satisfaction, sales experience, OI, and perceived competitive intensity) as potential predictors of their objective performance; then, we added the focal predictor, sales representatives' IMO. The results show that when we control for the effects of organizational commitment ($\beta = .15, p < .05$), sales representatives' OI ($\beta = .11, p < .05$), and perceived competitive intensity ($\beta = .07, p < .01$), sales representatives' IMO remain a potent predictor of their performance ($\beta = .16, p < .01$). Thus, H_9 is supported.

Additional Analysis

To rule out the alternative explanation that the length of the working relationship between the different dyads (i.e., dyadic tenure) creates the observed effects, we tested whether dyadic tenure interacts with the moderating effect of OI on MO diffusion. We also controlled for all lower-order two-way interactions. None of these additional interaction terms were significant. This suggests that regardless of the dyadic tenure, OI exerts a strong influence on the MO diffusion process. In other words, OI affects MO dissemination immediately regardless of how long people have worked together. We also tested the various three-way interactions among superiors' IMO, subordinates' OI, and the size of the direct- and indirect-report sales district network. Again, none of the three-way interaction terms were significant. This suggests that the interactions between IMO and OI are independent of the size of the corresponding networks.

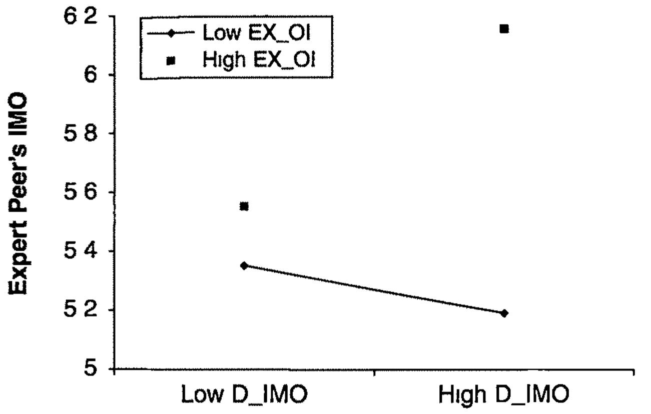
General Discussion

Drawing from the theories of MO as organizational learning (Gebhardt, Carpenter, and Sherry 2006; Slater and Narver 1995) and social learning (Bandura 1977), we proposed and empirically tested a meso framework of MO diffusion from

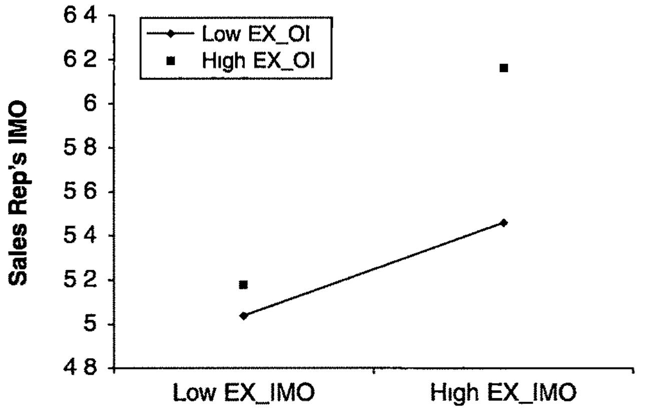
FIGURE 3

Expert Peers' OI as Moderator of IMO Transfer

A: Sales Director–Expert Peer Interface



B: Expert Peer–Sales Representative Interface

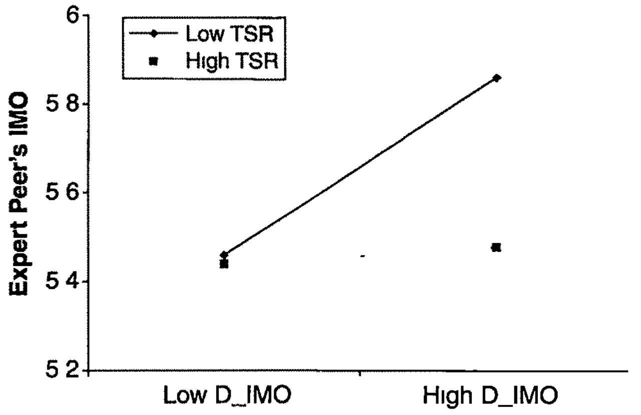


Notes: EX_OI = expert peers' OI, EX_IMO = expert peers' IMO, and D_IMO = sales directors' IMO.

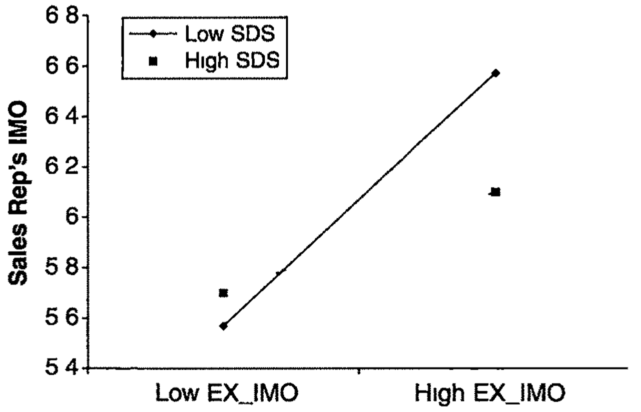
FIGURE 4

Network Size as Moderator of IMO Transfer

A. Sales Director–Expert Peer Interface



B: Expert Peer–Sales Representative Interface



Notes: D_IMO = sales directors' IMO, EX_IMO = expert peers' IMO, TSR = total number of sales representatives per sales director, and SDS = sales district size.

a social learning theory perspective. This meso level of analysis, which captures the interaction between individuals and the environment (e.g., network size) at multiple levels within a firm, complements with previous macro (between-firm) research. The empirical analysis of a multilevel data set that spans top management, middle managers, and a large number of frontline employees provides strong support for our theorization. Table 4 summarizes the empirical results.

Theoretical Implications

This study builds on and extends the MO literature in several ways. First, consistent with previous research, we found that MO implementation depends on top management. However, we extend this understanding by demonstrating that middle layers in the organization (e.g., middle managers, expert peers) serve as important envoys in diffusing this market-driven learning to frontline employees. As is evident in the empirical results and as we illustrate in Figure 1, the findings go beyond the one-way trickle-down effect (Jones, Busch, and Dacin 2003) to show that (1) the influence of top management on frontline employees is realized indirectly through the two types of envoys rather than directly, (2) in addition to middle managers, top managers may need to rely on distant expert peers to implement MO, and (3) envoys' characteristics and network size may block the trickle-down effect. Notably, the important role of expert peers in the MO diffusion process has not received much academic attention. In the customer orientation literature, the influence of expert peers on other frontline employees is also largely neglected. This negligence may be due to expert peers' lack of formal power and limited visibility in the organization as well as the focus of previous research on the formal rather than informal sources of influence in MO implementation. Thus, although this study focuses on MO, we believe that the findings can be generalized to research on individual-level customer orientation.[2] Together, these extensions enhance the understanding of how MO as market-driven learning is built and diffused in organizations. In this vein, Hartline, Maxham, and McKee (2000) claim that work-group socialization plays a pivotal role in the dissemination of a firm's strategy from top man-

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[2] We thank an anonymous reviewer for suggesting this.

TABLE 4
Summary of Findings

Hypotheses		Findings
H_1	Top managers' IMO positively influences middle managers' IMO, which in turn positively influences the IMO of sales representatives, including the expert peer	✓
H_2	Top managers' IMO positively influences expert peers' IMO, which in turn positively influences sales representatives' IMO	✓
H_{3a}	The higher a middle manager's OI, the stronger is the transfer of IMO from the top manager to the middle manager	✓
H_{3b}	The higher a middle manager's OI, the stronger is the transfer of IMO from the middle manager to the sales representatives, including the expert peer	✓
H_{4a}	The higher an expert peer's OI, the stronger is the transfer of IMO from the top manager to the expert peer	✓
H_{4b}	The higher an expert peer's OI, the stronger is the transfer of IMO from the expert peer to the other sales representatives	✓
H_5	The weaker a middle manager's OI, the stronger is the transfer of IMO from the top manager to the expert peer	✓
H_6	The larger the top manager's direct-report network, the weaker is the transfer of IMO from the top manager to the middle manager	n s
H_7	The larger the top manager's indirect-report network, the weaker is the transfer of IMO from the top manager to the expert peer	✓
H_{8a}	The larger the sales district's network, the weaker is the transfer of IMO from the middle manager to the sales representatives, including the expert peer	n s
H_{8b}	The larger the sales district's network is, the weaker is the transfer of IMO from the expert peer to the other sales representatives	✓
H_9	A sales representative's IMO is positively related to his or her performance	✓

Notes ✓ = supported, n s = not significant

agement to frontline employees Our findings not only confirm their claim but also identify the key types of people in the work group and the conditions under which each type is best suited to disseminate firm strategy

Second, we find that the correlation between IMO and OI is only 20, suggesting that these constructs are distinct from each other This study was among the first to document this disturbingly low correlation Thus, this finding supports the conjecture that as boundary spanners who are in frequent contact with customers, sales representatives who identify with the customer more than with the company can engage in excessive customer-oriented behavior that is beneficial for the customers but detrimental to the firm (Lam 2007) The interaction patterns between IMO and OI also underscore another surprising phenomenon While low-OI envoys are definitely undesirable, high-OI envoys who do not engage in IMO can be equally detrimental to the MO diffusion process More important, the enhancing role of the envoys' OI on their motivation to learn from superiors and to transfer down to lower levels of the organization is consistent for both the top manager–middle manager and the middle manager–sales representative interfaces This finding strongly supports Slater and Narver's (1995) projection that outside-in learning, such as MO, should not ignore the internal publics' perception

Third, the findings also contribute to the understanding of network size in MO diffusion throughout the organization More specifically, we found that network size matters more for the informal route of MO diffusion (expert peers–frontline employees interface) than for the formal route of MO diffusion (top managers–middle managers and middle managers–frontline employees interfaces) This seems to suggest that, all else being equal, vicarious learning is more important in the informal route because larger network sizes deprive frontline employees of the opportunities to observe and learn from expert peers In constrast, reinforcement learning may be more important in the formal route because the IMO transfer along this route is not contingent on the size of the direct-report network This finding also suggests that the moderating effect of network size is much more complex and deserves further research

Managerial Implications

Firms always try to be leaner and more economical The findings suggest that in doing so, top managers must be cognizant of several important factors so as not to destroy their firms' MO In this regard, this study has several managerial implications Again, we believe that these implications are applicable to the dissemination of customer-oriented behavior as well

Selecting an envoy for MO implementation We demonstrate that the envoys' characteristics are important in diffusing the MO culture from top management to frontline employees The moderating effects show that top managers who want to accelerate the implementation of MO must first sell the organization itself to the internal public, especially to middle managers and expert peers In this regard, the role of peers in work groups has been largely ignored in practice, and in the academic literature, peers or same-level coworkers have not received much attention (Chiaburu and Harrison 2008, Kohli and Jaworski 1994) With respect to MO implementation, the results suggest that expert peers can serve as an important type of envoy The results also suggest that top managers need to understand that the contingencies of this informal route of learning operate differently from those in the formal route More important, we show that what middle managers think and do might affect not only the formal route but also the informal route of MO diffusion from top managers to frontline employees through expert peers Specifically, the results indicate that when middle managers do not strongly identify with the organization, top managers might need to resort to expert peers

This raises an intriguing question Should top managers directly influence expert peers? At face value, this violates the golden rule of unity of command in management Given their centrality in diffusing MO not only to frontline employees but also to expert peers, middle managers are an important type of envoy in MO implementation Implementation through middle managers might be less costly because these managers are already formally charged with such responsibility However, the findings suggest that top managers have much to gain by influencing expert peers directly rather than relying solely on middle managers By establishing this informal route of influence, top managers will be able to leverage the strength of these experts beyond the middle managers Previous research has suggested that learning from peers is more effective because this form of learning is less intimidating than learning from formal supervisors (Morrison 1993, Yukl and Falbe 1991) By relying on expert peers, top managers might also overcome some of the middle managers' counterimplementation tactics

The best solution is to nurture the identification with the organization for both types of envoys The results show that compared with other contingencies to social learning, OI exerts a consistent enhancing effect on all the learning taking place in formal and informal routes Top managers have a multitude of methods to do this (e g , Wieseke et al 2009)

Downsizing, span of control, and MO diffusion The findings show that middle managers and expert peers play an indispensible role in diffusing MO and that highly market-oriented sales representatives drive sales performance However, when firms downsize, managers at the middle level are often the first victims The results show that this practice might be counterproductive First, we show that top managers can only exert an indirect influence on frontline employees through middle managers and expert peers to foster IMO at the front line Therefore, cutting these middle layers is equivalent to breaking critical linking pins in the formal route of MO diffusion The consequence of such practice may become even more severe if the expert peers are not good role models to frontline employees Second, the moderating effects of network size suggest that top managers who manage a broad base of frontline employees will not be able to influence expert peers to be more market oriented In addition, smaller work groups will facilitate the remaining work-group members to learn from expert peers Finally, the results suggest that the transfer of IMO from top managers to middle managers and from middle managers to frontline employees does not depend on the number of subordinates Thus, the formal route of social learning to become market oriented does not seem to depend on the supervisors' span of control, while the informal route of social learning is contingent on work-group size The immediate implication is that to facilitate peer-to-peer learning, managers should create smaller work groups or more opportunities for expert peers to interact with other group members

Limitations and Further Research

This study is not free from limitations The trade-off we made between comprehensiveness and focus provides several opportunities for further research First, given the cross-sectional nature of the data, we could not empirically demonstrate the causality of the relationships Research using longitudinal data and cross-lagged analysis might shed additional light on the theory we propose In this regard, Morrison (1993) finds that newcomers seek different types of information from different social referents in the organization, but the pattern does not change over time Further research could explore whether this also holds true for the diffusion of MO

Second, our conceptual framework features only two key moderators In general, these moderators operate in more or less the same manner for both middle managers and expert peers Moreover, the findings seem to suggest that there are different underlying processes through which MO diffuses through the formal route, which includes proximal leader–follower dyads, and the informal route, which has distal leader–follower dyads Additional research could explore the variables that might create countervailing and dissimilar effects on the two envoys Furthermore, middle layers might engage in behavior to block market-driven learning This kind of strategic counterimplementation has not received much academic research

Third, we answer the call for more research in marketing using the network perspective (Achrol and Kotler 1999) Here, we were able to capture only network size and the attributes of the envoys-as-nodes in the organizational structure The inclusion of other social network variables might push the theoretical envelope even further (for a review of the relational basis of attitudes, see Erickson 1988) In addition, research could explore whether the similarity in MO across multiple levels in an organization is helpful It might be that learning solely from envoys helps sales representatives perform in the short run but restricts them from being more innovative in the long run Finally, we tested the conceptual framework using data from one firm The multilevel nature of the data fits with the purpose of conducting a fine-grained investigation of MO implementation (Slater and Narver 1995), however, further research might explore whether the relationships we hypothesize also hold in other contexts

Appendix A
Measurement Scales

IMO (All Levels)

Adapted from Saxe and Weitz 1982, Thomas, Soutar, and Ryan 2001, Voss and Voss 2000 (1 = "strongly disagree," and 7 = "strongly agree")

Product Orientation

1 I am always looking for new products and services
2 I always reconsider and develop the product and service offering of our company
3 I consider innovative new products and services as a key component of success

Competitor Orientation

4 I pay close attention to competitors' [competitors' salespeople's] activities
5 I keep a close eye on our competitors' [competitors' salespeople's] customer retention tactics
6 I monitor exactly what special actions our competitors are doing

Customer Orientation

7 I think customer preferences are a key factor to the success of [name of the company]
8 I frequently survey customers to find out the products and services they would like to see in the future
9 The goals I set for my [subordinates] are mainly aiming at customer satisfaction [only asked at managers' level]
10 I try to figure out what a customer's needs are
11 I have the customer's best interests in mind
12 I try to help customers achieve their goals [only asked at sales representatives' level]
13 I take a problem solving approach in selling products or servicers to customers [only asked at sales representatives' level]
14 I offer the product of mine that is best suited to the customer's problem [only asked at sales representatives' level]
15 II try to find out which kinds of products or services would be most helpful to customers [only asked at sales representatives' level]

OI (All Levels)

Adapted from Mael and Ashforth 1992 (1 = "strongly disagree," and 7 = "strongly agree")

1 When someone criticizes [organization's name], it feels like a personal insult
2 I am very interested in what others think about [organization's name]
3 When I talk about [organization's name], I usually say "we" rather than "they"
4 This organization's successes are my successes
5 When someone praises this organization, it feels like a personal compliment
6 If a story in the media criticized [organization's name], I would feel embarrassed

Competitive Intensity (All Levels)

Adapted from Jaworski and Kohli 1993 (1 = "strongly disagree," and 7 = "strongly agree")

1 Competition in my district is cutthroat
2 Competitors in my district are relatively strong
3 In my district, the competition with suppliers offering products and services similar to [organization's name] is immense

Expertness (to Identify the Expert Peer in Each Group)

Formative composite of sales experience (in years), product knowledge (see scale), and "sales-versus-budget" performance (sales as percentage of sales representative's budget)

Product Knowledge (Sales Representative's Level)

1 I know the design and specifications of company products very well
2 I know the applications and functions of company products very well
3 I am able to detect causes of operating failure of company products
4 I keep abreast of our company's production and technological developments

Appendix B
Model Specification

In what follows, we report the equations of the multilevel models (we report the results in Table 2)

Model 1: Sales Managers' IMO as Dependent Variable

Level 1

(B1 1)
$$SM\_IMO_{ij} = \beta_{0j} + \beta_{1j}(SM\_OI_{ij}) + \beta_{2j}(SM\_CI_{ij}) + r_{ij}$$

Level 2

(B1 2)
$$\beta_{0j} = \gamma_{00} + \gamma_{01}(A\_IMO_j) + \gamma_{02}(D\_IMO_j) + \gamma_{03}(TDR_j) + \gamma_{04}(D\_IMO_j \times TDR_j) + u_{0j},$$

(B1 3)
$$\beta_{1j} = \gamma_{10} + \gamma_{11}(D\_IMO_j), \text{ and}$$

(B1 4)
$$\beta_{2j} = \gamma_{20},$$

where SM_IMO = sales managers' IMO, A_IMO = mean of IMO per region managed by a sales director, SM_OI = sales managers' OI, D_IMO = sales directors' IMO, and TDR = total number of direct reports,

Model 2: Expert Peers' IMO as Dependent Variable

Level 1

(B2 1)
$$\begin{aligned} EX\_IMO_{ij} = {} & \beta_{0j} + \beta_{1j}(SD\_IMO_{ij}) + \beta_{2j}(EX\_OI_{ij}) \\ & + \beta_{3j}(EX\_CI_{ij}) + \beta_{4j}(SM\_CI_{ij}) \\ & + \beta_{5j}(SM\_IMO_{ij}) + \beta_{6j}(SM\_OI_{ij}) \\ & + \beta_{7j}(SDS_{ij}) + \beta_{8j}(SM\_IMO_{ij} \times SM\_OI_{ij}) \\ & + \beta_{9j}(SM\_IMO_{ij} \times SDS_{ij}) + r_{ij} \end{aligned}$$

Level 2

(B2 2)
$$\beta_{0j} = \gamma_{00} + \gamma_{01}(D\_IMO_j) + \gamma_{02}(TSR_j) + \gamma_{03}(D\_IMO_j \times TSR_j) + u_{0j},$$

(B2 3) $\beta_{1j} = \gamma_{10}$,

(B2 4) $\beta_{2j} = \gamma_{20} + \gamma_{21}(\text{D\_IMO}_j)$,

(B2 5) $\beta_{3j} = \gamma_{30}$,

(B2 6) $\beta_{4j} = \gamma_{40}$,

(B2 7) $\beta_{5j} = \gamma_{50}$,

(B2 8) $\beta_{6j} = \gamma_{60} + \gamma_{61}(\text{D\_IMO}_j)$, and

(B2 9) $\beta_{mj} = \gamma_{m0}, m \in N = \{7, 8, \ , 9\}$,

where EX_IMO = expert peers' IMO, SD_IMO = mean of IMO per sales district, EX_OI = expert peers' OI, SM_CI = sales managers' perceived competitive intensity, EX_CI = expert peers' perceived competitive intensity, SM_IMO = sales managers' IMO, SM_OI = sales managers' OI, D_IMO = sales directors' IMO, SDS = sales district size, and TSR = total number of sales representatives per sales director,

Model 3: Sales Representatives' IMO as Dependent Variable

Level 1

(B3 1)
$$\text{SR\_IMO}_{ijk} = \pi_{0jk} + \pi_{1jk}(\text{SR\_OI}_{ijk}) + \pi_{2jk}(\text{SR\_CI}_{ijk}) + e_{ijk}$$

Level 2

(B3 2)
$$\begin{aligned}\pi_{0jk} = {} & \beta_{00k} + \beta_{01k}(\text{SD\_IMO}_{jk}) + \beta_{02k}(\text{SM\_CI}_{jk}) \\ & + \beta_{03k}(\text{EX\_CI}_{jk}) + \beta_{04k}(\text{SM\_IMO}_{jk}) \\ & + \beta_{05k}(\text{EX\_IMO}_{jk}) + \beta_{06k}(\text{SM\_OI}_{jk}) \\ & + \beta_{07k}(\text{EX\_OI}_{jk}) + \beta_{08k}(\text{SDS}_{jk}) \\ & + \beta_{09k}(\text{SM\_IMO}_{jk} \times \text{SM\_OI}_{jk}) \\ & + \beta_{010k}(\text{EX\_IMO}_{jk} \times \text{EX\_OI}_{jk}) \\ & + \beta_{011k}(\text{SM\_IMO}_{jk} \times \text{SDS}_{jk}) \\ & + \beta_{012k}(\text{EX\_IMO}_{jk} \times \text{SDS}_{jk}) + r_{0jk}, \text{ and}\end{aligned}$$

(B3 3) $\pi_{mjk} = \beta_{m1k}, m \in N = \{1, 2\}$

Level 3

(B3 4) $\beta_{00k} = \gamma_{000} + \gamma_{001}(\text{D\_IMO}_k) + u_{00k}$,

(B3 5) $\beta_{0nk} = \gamma_{0n0}, n \in N = \{1, 2, \ , 12\}$,

(B3 6) $\beta_{11k} = \gamma_{110}$, and

(B3 7) $\beta_{21k} = \gamma_{210}$,

where SR_IMO = sales representatives' IMO, SR_OI = sales representatives' OI, SR_CI = sales representatives' perceived competitive intensity, SD_IMO = mean of IMO per sales district, SM_IMO = sales managers' IMO, EX_IMO = expert peers' IMO, SM_OI = sales managers' OI, EX_OI = expert peers' OI, SM_CI = sales managers' perceived competitive intensity, EX_CI = expert peers' perceived competitive intensity, SDS = sales district size, and D_IMO = sales directors' IMO

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Holger Ernst, Wayne D. Hoyer, & Carsten Rübsaamen

Sales, Marketing, and Research-and-Development Cooperation Across New Product Development Stages: Implications for Success

Prior research has identified the integration of marketing with research and development (R&D) as a key success factor for new product development (NPD). However, prior work has not distinguished the sales and marketing functions, even though they are distinctive departments within an organization. Therefore, the authors extend prior research and examine the effect of cross-functional cooperation among sales, marketing, and R&D on NPD performance across multiple stages of the NPD process. The authors use multiple-informant data from 424 sales, marketing, and R&D managers as well as project leaders of 106 NPD projects to test several hypotheses. The results show that the cooperation between sales and R&D and between sales and marketing has a significant, positive effect on overall NPD project performance beyond marketing–R&D cooperation. The authors also find that the effect of cross-functional cooperation among sales, marketing, and R&D on overall NPD project performance varies across stages of the NPD process. More specifically, the authors find that sales–R&D cooperation in the concept and product development stages is critical for greater new product success. Sales–marketing cooperation is important in the concept development stage but has surprisingly less impact in the implementation stage.

Keywords: sales, marketing, research and development, cross-functional cooperation, new product development, success

Cross-functional integration, especially between marketing and research and development (R&D), has been widely recognized as a key success factor in new product development (NPD) both in the theoretical literature (Brown and Eisenhardt 1995, Griffin and Hauser 1996) and in empirical studies (Henard and Szymanski 2001, Song and Parry 1997, Troy, Hirunyawipada, and Paswan 2008). By integrating marketing and R&D, companies can enhance the flow of market information, which is critical to the success of new products, into the NPD process (Ottum and Moore 1997, Wren, Souder, and Berkowitz 2000). However, in general, prior empirical research on marketing and R&D integration has not distinguished the sales and marketing functions (Ruekert and Walker 1987a, b, Song and Parry 1997, Troy, Hirunyawipada, and Paswan 2008), rather, both groups have been treated as a single functional unit. This is a major shortcoming because it contrasts with the practitioner view that "as a rule , they [marketing and sales] are separate functions within an organization" (Kotler, Rackham, and Krishnaswamy 2006, p. 68). This difference becomes clearly visible in the organizational charts of many companies in which sales and marketing are separate departments with different tasks and responsibilities (Workman, Homburg, and Gruner 1998).

The distinctiveness of sales and marketing is due to diverging departmental orientations or thought worlds (Dougherty 1992, Lawrence and Lorsch 1967). Recent work has shown that sales and marketing have different goal and time orientations, which can lead to interdepartmental conflict and hinder cross-functional integration (Homburg and Jensen 2007). Because NPD requires cross-functional integration, these differences in departmental orientations can be critical barriers to successful NPD (Dougherty 1992, Griffin and Hauser 1996). Thus, the role of sales in NPD needs to be explicitly examined beyond that of marketing. In other words, because sales and marketing have distinctively different functions and thought orientations, two further interfaces—between sales and R&D and between sales and marketing—must be considered to better understand the nature of effective cross-functional integration in NPD.

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Addressing the role of the sales function in NPD should expand existing knowledge on antecedents of new product successes and failures (Hultink and Atuahene-Gima 2000) Sales can potentially make complementary and valuable contributions that positively affect NPD performance For example, organizations have experienced difficulties in generating high-quality ideas in the early stages of NPD (Khurana and Rosenthal 1998), and this difficulty has been frequently identified as a major cause of the notoriously high failure rates of new products (Nobelius and Trygg 2002) Because the sales function has the closest contact to customers (Kotler, Rackham, and Krishnaswamy 2006) and a strong customer orientation (Homburg and Jensen 2007), its involvement and information sharing with R&D and marketing should improve the process of finding, assessing, and selecting more and better ideas for NPD in these early phases Therefore, the integration of sales with R&D and marketing could help lower new product failure rates (which are approximately 40%–75%, see Stevens and Burley 2003) and increase NPD performance

Overall, this study addresses these existing research gaps and makes the following key contributions to the marketing and NPD literature First, we focus on an important aspect of integration—namely, cross-functional cooperation—and examine the effect of sales–marketing and sales–R&D cooperation on NPD performance This sheds light on the following question To what extent does the integration of the sales function into NPD increase NPD performance? We simultaneously analyze the effect of cooperation between marketing and R&D on NPD performance This enables us to examine the relative importance of the marketing–R&D versus the sales–R&D interface for NPD performance, which could lead to a reassessment of the existing claim in the literature that the quality of the marketing–R&D interface is the predominant driver of NPD performance

Second, research is needed to determine whether the effect of cross-functional cooperation between sales and marketing and between sales and R&D on NPD performance varies across the different stages of the NPD process Prior work on the cooperation between marketing and R&D suggests that the effect of integration on performance varies across these stages (Olson et al 2001, Song, Thieme, and Xie 1998) Therefore, we adopt a process-oriented perspective in this study and investigate sales–marketing and sales–R&D cooperation and their respective impacts on NPD performance across multiple NPD stages

Conceptual Framework

Conceptual Definition of Cross-Functional Cooperation

In previous work, scholars have proposed a variety of definitions for the cross-functional integration construct (for overviews, see Kahn 1996, Olson et al 2001) Analogously, multiple terms, such as "cooperation," "interaction," "communication," and "coordination," have been employed in the context of studying the effects of interfunctional integration in NPD (Song, Montoya-Weiss, and Schmidt 1997) Furthermore, previous research in this area can be classified into two basic categories (Kahn 1996, Olson et al 2001) a behavioral approach, which captures the level of interaction and information sharing between members from different departments simultaneously (Gupta, Raj, and Wilemon 1986, Song, Montoya-Weiss, and Schmidt 1997, Song and Parry 1992), and an attitudinal approach, which views integration as "collaboration" and defines it "as an affective, volitional, mutual/shared process where two or more departments work together, have mutual understanding, have a common vision, share resources, and achieve collective goals" (Kahn 1996, p 136)

In this study, we focus on the behavioral dimension of integration, as Gupta, Raj, and Wilemon (1986), Olson and colleagues (2001) and Song and Parry (1992) suggest, because it is most consistent with our research objectives Specifically, because we examine cross-functional integration with regard to specific NPD activities at the project level, we need to examine actual behavior rather than interdepartmental attitudes because attitudes are more intangible, more abstract, and largely independent of certain activities along the NPD process (Olson et al 2001) Consistent with recent work (Olson et al 2001, Song, Montoya-Weiss, and Schmidt 1997), we use the term "cross-functional cooperation" This definition implies that the measurement of cross-functional cooperation addresses the level of involvement and information sharing between members from sales, marketing, and R&D in NPD

Cooperation of Sales, Marketing, and R&D in NPD

A considerable amount of conceptual and empirical research has been devoted to the cooperation between marketing and R&D because both departments are highly relevant for successful NPD (Griffin and Hauser 1996, Gupta, Raj, and Wilemon 1986, Song, Thieme, and Xie 1998, Souder 1988) The marketing function is responsible for a wide range of activities that provide relevant information for the entire NPD process These activities include, among others, market trend analysis, opportunity assessment, market research, market segmentation, product positioning, and communication (Griffin and Hauser 1996, Rouzies et al 2005) The R&D department is primarily concerned with the generation of new technological knowledge and applying this knowledge to design new products (Griffin and Hauser 1996, Souder 1988) Both sets of activities need to be aligned to share relevant information and to develop a new product that meets the market requirements and generates satisfactory financial returns to the firm This is enhanced through a high level of cross-functional cooperation between R&D and marketing during the NPD process (Griffin and Hauser 1996)

As we mentioned previously, however, a key problem is that prior research on the effects of cross-functional cooperation has not explicitly distinguished the sales function and the marketing function According to Homburg and Jensen (2007), sales and marketing are different with regard to two dimensions orientation and competence

First, sales and marketing differ in their goal orientation Marketing focuses more strongly on the product, while sales concentrates more on the customer (Homburg and

Jensen 2007) This is because brand or product managers from the marketing department are usually responsible for a specific product or product portfolio, while sales is typically responsible for a certain set of customers in a specific geographical area or industry segment (Cespedes 1995, Rouzies et al 2005) As a result, sales has a much stronger and more operational link to individual customers, while marketing has a more strategic focus on customer segments and the entire product business Sales is also more short-term oriented than marketing (Homburg and Jensen 2007) because it is typically faced with direct and intensive pressures and demands from customers and is seeking fast solutions to these problems Conversely, marketing examines the broader picture with its long-term implications for the overall business (Cespedes 1995, Weitz 1978) These differences in time and goal orientation can have an important effect on the assessment of investment decisions in NPD and on how the NPD task is understood in both departments, either in developing a product or in building a relationship with a customer (Dougherty 1992, Griffin and Hauser 1996)

Second, Homburg and Jensen (2007) find significant competence differences between sales and marketing Sales has higher levels of specific market knowledge (i e , about customers and competitors) than marketing In particular, sales has unique information about customer needs that is relevant for other functions in the organization to carry out the NPD task effectively Therefore, we expect the effect of cross-functional sales–R&D cooperation to be most relevant for aspects of NPD in which specific information about customer needs is required

Because of their different departmental orientations, marketing and sales provide complementary information that is valuable for the NPD process Marketing provides strategic market information, while sales provides specific customer information Combining this information is critical because it helps avoid niche solutions for an individual customer that, in turn, neglect the attractiveness of larger market segments or market trends or are not aligned with the firm's overall product portfolio Thus, sales–marketing cooperation should have a positive impact on NPD performance

Hypotheses Development

From a theoretical perspective, hypotheses regarding the positive effect of cross-functional cooperation among sales, marketing, and R&D on NPD performance can be derived from resource dependence theory (Ruekert and Walker 1987b, Salancik and Pfeffer 1978) According to this theory, the degree of interdependence and the nature of interactions among functional specialists in an organization are influenced by the accomplishment of the collective task (Song and Swink 2002) The NPD processes involve a wide set of tasks that require the participation of various functional areas Specialization leads to the need for integration among functions because each department holds a specific set of information required for the NPD process (Song, Thieme, and Xie 1998, Urban and Hauser 1993) This information needs to be effectively shared among multiple functions to achieve successful NPD Therefore, cross-functional cooperation should increase NPD performance

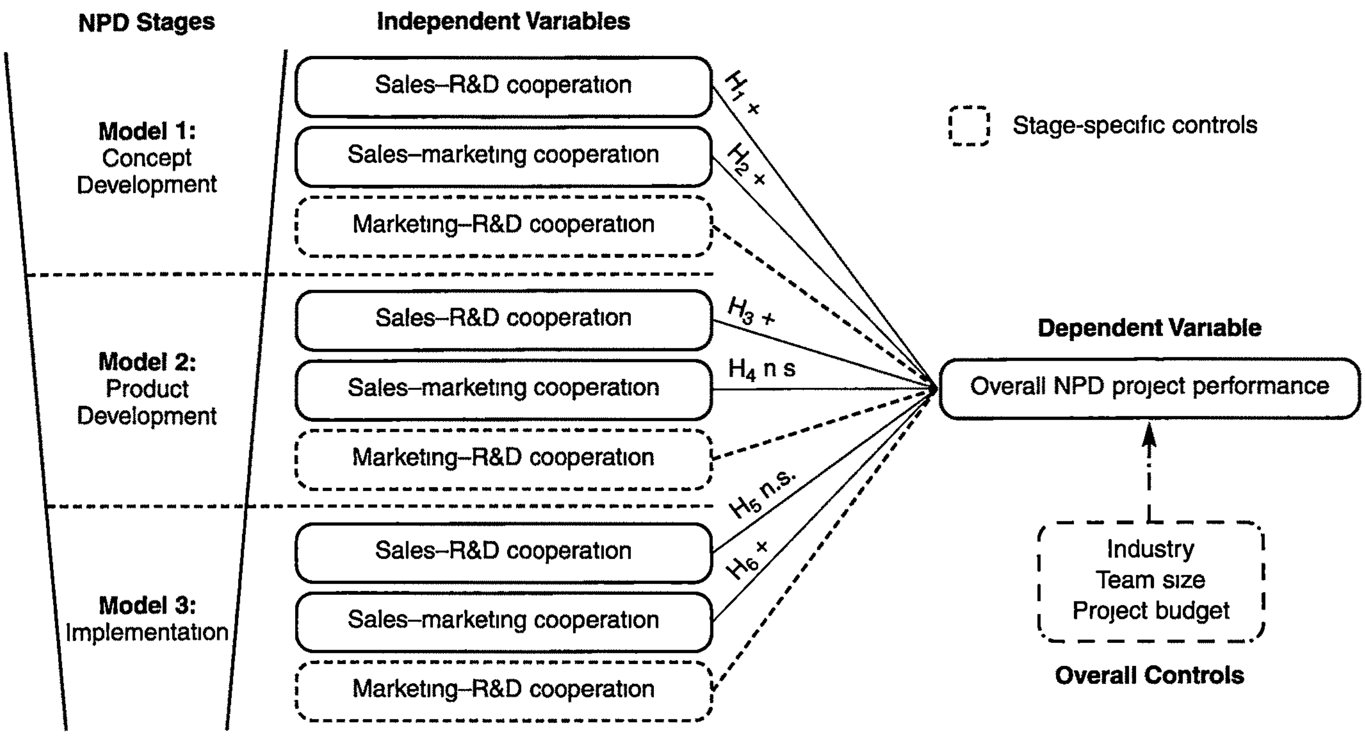
The interdependencies between functional departments, and therefore the performance effect of cross-functional cooperation between two departments, may vary across stages As Song, Thieme, and Xie (1998, p 289) point out, "new product success may be more likely when a firm employs function-specific and stage-specific patterns of cross-functional integration than it is when the firm attempts to integrate all functions during all NPD stages" Furthermore, the different functions are inherently more or less involved at different stages For example, R&D has a less prominent role during the implementation stage, during which sales and marketing are more critical to an effective launch This notion is also supported by resource dependence theory, which suggests that the relative importance of each function in NPD highly depends on the nature of tasks and activities Because activities differ across NPD stages, information requirements to accomplish these tasks also vary across these stages This leads to varying levels of interdependencies and, therefore, cross-functional cooperation among sales, marketing, and R&D (Olson et al 2001) Thus, we propose that the cooperation of sales with R&D and marketing will not always have an equally strong impact on NPD performance during all NPD stages To assess the phase-specific impact of sales–R&D and sales–marketing cooperation, we divided the NPD process into three distinct phases, in line with prior work on related topics (Song and Parry 1997) concept development (e g , generation and refinement of new product ideas, market analysis, preparation of product concept), product development (e g , actual technical product development, execution of prototype tests, test marketing), and implementation (e g , market launch, training, after-sales support)

Because the effect of marketing–R&D cooperation on NPD performance has been extensively studied (Griffin and Hauser 1996, Olson et al 2001, Song and Parry 1992), we focus primarily on the role of the sales function and develop hypotheses regarding the effect of cross-functional cooperation between sales and marketing and between sales and R&D on NPD performance Nevertheless, we also empirically examine the level of stage-specific cooperation between marketing and R&D to test whether the sales and R&D cooperation on NPD performance has an effect beyond the effect of marketing and R&D cooperation on NPD performance Figure 1 illustrates the research framework and the hypotheses

Concept Development Stage

The concept development stage typically involves the generation and assessment of new product ideas and further refinement of the most promising ideas into new product concepts before they enter the development stage (Kim and Wilemon 2002) It is well established that the collection of customer information is critical in this early stage of NPD (Ottum and Moore 1997) because the level of uncertainty regarding customer requirements is high Drawing on resource dependency theory, we argue that sales–R&D cooperation is important in the concept development phase because the involvement and information sharing between

FIGURE 1
Research Framework and Hypotheses for the Effect of Stage-Specific Sales–R&D and Sales–Marketing Cooperation on Overall NPD Project Performance


NPD Stages
Independent Variables
Model 1: Concept Development
Sales–R&D cooperation
Sales–marketing cooperation
Marketing–R&D cooperation
Model 2: Product Development
Sales–R&D cooperation
Sales–marketing cooperation
Marketing–R&D cooperation
Model 3: Implementation
Sales–R&D cooperation
Sales–marketing cooperation
Marketing–R&D cooperation
H1 +
H2 +
H3 +
H4 n s
H5 n.s.
H6 +
Stage-specific controls
Dependent Variable
Overall NPD project performance
Industry
Team size
Project budget
Overall Controls

Notes n s = not significant

sales and R&D channels critical information regarding customer requirements into the NPD process For example, in the case of idea generation, the involvement of sales with R&D is critical because it increases not only the number of new product ideas but also the likelihood that these ideas will be more in line with customer needs and wants This increases the number of potentially successful ideas entering the NPD process and decreases the likelihood of R&D failing to recognize an important opportunity In addition, it enables R&D to acquire immediate, valuable customer feedback on ideas generated internally This reduces the risk that an internally developed idea that is not in line with customer needs is taken into the next stage of the NPD process

Other critical activities in the concept development stage involve making decisions on both the product concept and the design before they are taken into the development stage (Ernst 2002) Afterward, a significant amount of R&D resources are committed to the NPD project, which then becomes difficult to terminate (Biyalogorsky, Boulding, and Staelin 2006, Boulding, Morgan, and Staelin 1997) Therefore, the level of risk involved at this critical stage of the NPD project is high To ensure that the features of the product are aligned with customer requirements and that customers actually perceive the unique selling proposition in relation to competing products (which is an important antecedent of new product success, see Cooper 1980, Ernst 2002), sales needs to share its insights on customer requirements with R&D before the NPD project enters the development stage

Thus, sales–R&D cooperation promises to increase the flow of critical customer information into the concept development stage of NPD, and R&D can use this information to better align its activities with customer requirements Because the level of interdependence is high during the concept development stage (Kim and Wilemon 2002), sales–R&D cooperation is critical to the overall NPD project success We postulate the following hypothesis

> H_1 Sales–R&D cooperation in the concept development phase has a significant, positive impact on overall NPD project performance

In addition to the sales–R&D interaction, sales–marketing cooperation in the concept development stage can have a positive impact on new product success Because of their complementary orientations and knowledge base, sales–marketing cooperation can support the planning and formulation of the NPD goal and strategy (Homburg and Jensen 2007) A lack of cooperation at this early stage poses the danger that sales, because of its strong operational link with customers and short-term orientation to solve immediate customer problems (Homburg and Jensen 2007), may provide information for the NPD project that conflicts with a firm's overall strategic market goals For example, strong ties to a limited number of key customers might lead to a bias in the ideas gathered in the marketplace Such misleading ideas could incur high costs and risks for a company They could further lead to the development of niche products or to the premature rejection of ideas outside the market of existing mainstream customers (Bower and Christensen 1995; Dougherty 1992).

To overcome these problems, ideas and product concepts need to be assessed with regard to broader market requirements and the firm's overall NPD strategy. If the new product addresses the needs of broader market segments and/or fits into the firm's NPD strategy, it can create higher commercial and strategic value to the firm. Sales typically lacks this type of information (Homburg and Jensen 2007), and therefore sales–marketing cooperation is required to generate ideas with the highest market potential, align the ideas with a firm's NPD strategy, and effectively define the overall product concept and product features before the NPD project is taken into the development stage. In other words, information from marketing's strategy focus complements sales' knowledge of customers to more effectively align specific customer requirements with the needs of larger market segments during concept development. The more adequately the product concept is defined and aligned with customer, market, and strategic requirements in the early stage of NPD, the higher is the likelihood that the new product will become a commercial success (Cooper 2001). Thus, sales–marketing cooperation during concept development will increase overall NPD project performance. We propose the following hypothesis:

> H_2: Sales–marketing cooperation in the concept development phase has a significant, positive impact on overall NPD project performance.

Product Development Stage

In terms of sales–R&D cooperation for the actual technical product development, what matters most is getting feedback from customers on the technical product design and testing the prototype with selected customers (Song and Parry 1997). Because of its intimate knowledge about customers, sales can help R&D select and access the most promising pilot or reference customers for testing the prototype. Getting access to the right customer for testing purposes often depends on personal contacts (Hansen, Mors, and Løvås 2005). Experienced salespeople often possess this kind of network and knowledge that enable them to contact customers and motivate them to cooperate, especially when it comes to innovative products that may initially face market resistance and involve high risks for the customer (Hauschildt and Kirchmann 2001). Thus, we propose the following hypothesis:

> H_3: Sales–R&D cooperation in the product development phase has a significant, positive impact on overall NPD project performance.

In terms of product development, as we mentioned previously, this stage is primarily concerned with the development of the actual product, and this is mainly a task for R&D. In addition to the specific information acquired about customers from sales, R&D needs further information from marketing. Marketing needs to carry out test-marketing activities and to assess the overall market acceptance of the new product before actually launching it. This broader and more strategic market information needs to be shared with R&D in case modifications to the product design need to be made to increase the new product's market potential. Because of these interdependencies, R&D–marketing cooperation is important in the product development stage.

Thus, consistent with common wisdom, both sales and marketing play an important role at this stage of the NPD process (i.e., in terms of their cooperation with R&D). However, marketing–sales cooperation is less relevant here because specific information about individual customers provided by sales does not help marketing accomplish its main task (i.e., conducting broader test markets to assess the overall market acceptance and overall strategic and commercial benefits of the new product to the firm before launch). As a result, fewer interdependencies exist, and the cooperation is less important at this stage of the NPD process. Thus, we posit the following hypothesis:

> H_4: Sales–marketing cooperation in the product development phase has no impact on overall NPD project performance.

Implementation Stage

The implementation phase typically involves activities such as market launch, product training, after-sales support, and monitoring of competitors' reactions (Song and Parry 1992). Sales would typically be involved with the market launch and monitoring of competitors' reactions. When R&D plays a role here, it typically involves direct interaction with customers to provide product training and support. In a few instances, R&D might provide information to sales to facilitate these activities. However, on a general level, these tasks do not require much *interaction* between sales and R&D. This notion was confirmed in exploratory interviews we conducted during scale construction for the study. Senior managers from the interviewed firms indicated that the provision of R&D support to customers is a standard service offered but does not really require much interaction between R&D and sales. Therefore, resource dependency theory would predict that cooperation between these departments has little effect on NPD performance at the implementation stage. Overall, we posit the following hypothesis:

> H_5: Sales–R&D cooperation in the implementation phase has no impact on overall NPD project performance.

In contrast to sales–R&D cooperation, sales–marketing cooperation plays a critical role at the implementation phase. During this stage, both sales and marketing possess information that is particularly critical to NPD performance (Hultink and Atuahene-Gima 2000; Rochford and Wotruba 1996). Given the high failure rates of new products, the sales function shares a high degree of responsibility for new product success because it is ultimately responsible for selling the new product to the customer. A lack of sales' involvement in this critical stage of the NPD process could lead to the pursuit of an ineffective launch strategy or a low sales force commitment toward the new product. When this occurs, the likelihood that the new product will be successfully launched in the market is sharply reduced (Hultink and Atuahene-Gima 2000). This is especially problematic for very innovative new products, for which market resistance is strong and a huge sales effort is needed to overcome this resistance

Furthermore, because of its higher level of customer knowledge, sales can be instrumental in identifying and contacting certain customers who are crucial for the diffusion of new products in the market, such as opinion leaders, innovators, and early adopters (Gordon and Schoenbachler 1997, Rogers 1976) Marketing lacks this customer-specific information, and therefore involvement and information sharing with sales can provide useful input in the development of the implementation strategy In addition, marketing depends on feedback from the sales department regarding product usability, acceptance, and after-sales support Consequently, first-hand customer feedback from sales is of critical importance to the marketing department for the successful implementation of the new product Thus, sales–marketing cooperation in the implementation stage should increase NPD performance This leads to the following hypothesis

H_6 Sales–marketing cooperation in the implementation phase has a significant, positive impact on overall NPD project performance

Methodology

Sample

This study primarily focused on processes and outcomes associated with individual NPD projects rather than on the aggregate NPD performance of an entire firm or division Consequently, the study examined the cooperation between pairs of functions over the course of an NPD project Drawing from AMADEUS, a database that classifies German companies according to their sales volume, among other variables, we selected the top 300 companies in terms of revenues from multiple industry sectors

We conducted Internet research and made exploratory telephone calls to determine whether the selected companies were generally appropriate for the proposed empirical study (i e , we excluded companies with no internal R&D, sales, or marketing departments as well as pure sales companies) and to identify the right contact people from sales, marketing, and R&D within the selected firms To avoid the problems of an informant and common method bias (Brown and Eisenhardt 1995), we collected data from multiple informants Responses from the project manager and sales, marketing, and R&D managers who were closely involved in the NPD project were required for each NPD project data set to be complete Project managers assessed the dependent variable (overall NPD project performance), and the level of cross-functional cooperation was evaluated independently by respondents from sales, marketing, and R&D We administered the survey in such a way that all respondents answered the questions with regard to the same project To ensure that this occurred, the name or the company-specific unique code of the respective project was always stated at the beginning of each individual questionnaire and appeared again on each page of the questionnaires

In total, we contacted 199 companies and asked them to participate in the study We guaranteed anonymity to all informants After several reminder e-mails and multiple telephone calls to increase the response rate, we received 424 questionnaires from 106 NPD projects across 36 companies A profile of the sample shows a reasonable split of projects across the industries mechanical engineering (33), medical devices (23), automotive (19), consumer products (17), and software (14) With 36 of the 199 companies participating, the effective response rate of 18 1% can be considered satisfactory for subsequent analysis given the ambitious study design (Menon, Jaworski, and Kohli 1997)

Measures

Cross-functional cooperation Following Song and Parry (1992), we identified 18 key activities along the entire NPD process that could potentially require the cooperation of sales, marketing, and R&D Because this scale was initially developed to study the cooperation between R&D and marketing, we conducted 14 in-depth interviews with experts from academia and industry to ensure that this list of activities was appropriate for studying sales–marketing and sales–R&D cooperation

For each of these 18 NPD activities, we asked respondents from sales, marketing, and R&D to assess the level of cooperation with the two remaining functions The level of cooperation referred to the level of involvement and information sharing with the other department with regard to each of the 18 NPD activities All items were measured on a seven-point scale ranging from “strongly disagree” (1) to “strongly agree” (7) (for a detailed description of the measures, see the Appendix) Using the multiple-item estimator for within-group interrater reliability (IRR), as James, Demaree, and Wolf (1984) propose, we found general agreement among the raters in terms of the level of cross-functional cooperation The IRR values ranged between 70 and 77 Given this homogeneity of ratings at or above the level of the IRR threshold at 70, we aggregated the data by calculating the arithmetic mean In line with Jarvis and colleagues’ (2003) suggested criteria, we specified all constructs to be formative with causal indicators

Overall NPD project performance Overall NPD project performance captures the success of the completed NPD project We followed previous NPD research and used a commonly applied subjective measure of new product success (Song and Parry 1997) (for a detailed description of the NPD performance measures, see the Appendix)

Controls We included multiple control variables in the analyses To assess the impact of sales cooperation with R&D beyond the effect of marketing–R&D cooperation, we controlled for the level of marketing–R&D cooperation in each NPD stage (for the measurement of marketing–R&D cooperation, see the Appendix) By including industry as an overall control variable, we were able to adjust for significant differences between industries with regard to new product performance In addition, we included two well-established overall controls at the project level project budget and team size The size of a project team is an important structural variable with potential influences on the quality of a team's joint task processes and project success (Campion, Medsker, and Higgs 1993, Gladstein 1984) The higher the project budget, the more senior management attention the project typically receives, and senior management support has been found to have a positive effect on NPD performance (Ernst 2002, Henard and Szymanski 2001) Table 1 summarizes descriptive information about all the variables and constructs used in the analyses

Analysis Plan

We tested the research hypotheses using a multiple-indicator structural equation model Because we used both reflective and formative specifications for the constructs, the commonly used covariance-based structural equation modeling (SEM) techniques, such as LISREL or AMOS, could potentially lead to "identification problems, the occurrence of implied co-variances of zero among some measured variable, and the existence of equivalent models" (MacCallum and Browne 1993, p 540) in the course of analysis Because this might have an undesirable impact on the findings (MacCallum and Browne 1993), we used partial least squares (PLS) because this is the most accepted variance-based distribution-free SEM approach The PLS approach accommodates models that combine formative and reflective constructs (Chin 1998, Wold 1985) We used the PLS Graph software (Version 3 0) developed by Chin (1998) for the analyses We calculated three independent PLS models for each of the three NPD stages To evaluate the three PLS models, we followed Chin's recommendations and differentiated between reflective and formative constructs

We tested the formative constructs for multicollinearity by calculating variance inflation factors on the item level (Im et al 2003, Michael, Rochford, and Wotruba 2003) and condition indexes on the construct level (Belsley 1984) The results indicate no significant parameter distortion due to multicollinearity problems (variance inflation factor < 10) This finding is underscored by condition indexes ranging between 5 and 19, which are well below the upper threshold of 30 (Belsley 1984) Following Diamantopoulos and Winklhofer's (2001) suggested procedure, we included a reflective indicator to test the formative constructs for external validity The relationships between the formative constructs and their reflective indicators are strong and highly significant ($p \leq$ 001)

On the structural model level, we estimated R-square values and the Stone-Geisser criterion (Q^2) The adjusted R-square values range between 22 and 45 and indicate a satisfactory explanatory power for the models compared with previous studies on cross-functional cooperation in NPD projects (Olson et al 2001) In PLS models, the Stone-Geisser test criterion (Q^2) is used as a measure for predictive relevance The Q^2 values are all positive and indicate a sufficient level of predictive relevance (Fornell and Bookstein 1982)

We calculated path coefficients and levels of significance for control variables according to the group comparison method (Avolio, Howell, and Sosik 1999) For this procedure, we divided the sample into two subgroups and compared path coefficients for significant differences Subsequently, we test the significances of the differences with a t-test (Keil 2000)

Results

Tests of Hypotheses: Overall NPD Project Performance

In this section, we present the results with regard to the effect of sales–R&D and sales–marketing cooperation on overall NPD project performance across multiple NPD

TABLE 1
Descriptive Statistics

Variables and Constructs	Number of Items	Number of Observations	M	SD	Minimum	Maximum
Overall NPD project performance	4	106	4 6	1 4	1 0	7 0
Market share	1	63	20 5	28 2	1 0	100
Stage 1[a] marketing–R&D cooperation	7	106	3 9	1 5	1 0	7 0
Stage 1 sales–R&D cooperation	7	106	2 7	1 6	1 0	7 0
Stage 1 sales–marketing cooperation	7	106	4 5	1 5	1 0	7 0
Stage 2[b] marketing–R&D cooperation	7	106	4 2	1 7	1 0	7 0
Stage 2 sales–R&D cooperation	7	106	2 4	1 5	1 0	7 0
Stage 2 sales–marketing cooperation	7	106	3 6	1 5	1 0	7 0
Stage 3[c] marketing–R&D cooperation	4	106	4 7	1 5	1 0	7 0
Stage 3 sales–R&D cooperation	4	106	2 7	1 5	1 0	7 0
Stage 3 sales–marketing cooperation	4	106	3 7	1 5	1 0	7 0
Project budget	1	66	16 4	95 8	1 0	800
Team size	1	104	22 4	42 5	3 0	300
Mechanical engineering	1	33	—	—	—	—
Medical devices	1	23	—	—	—	—
Automotive	1	19	—	—	—	—
Consumer products	1	17	—	—	—	—
Software	1	14	—	—	—	—

[a]Concept development
[b]Product development
[c]Implementation

process stages The outcomes of the PLS analyses are in Table 2

H_1 proposed that during concept development, sales–R&D cooperation has a significant, positive impact on overall NPD project performance This hypothesis is supported because the path coefficient for sales–R&D cooperation in the concept development stage is positive (26) and significant ($p \leq$ 01) H_2, which pertains to sales–marketing cooperation in the concept development stage, is also supported The path coefficient of 25 ($p \leq$ 05, see Table 2) reveals a significant, positive relationship between the level of sales–marketing cooperation and overall NPD project performance in this stage

H_3 pertains to the impact of sales–R&D cooperation on overall NPD project performance during product development This hypothesis is also supported, with a positive, significant path coefficient of 36 ($p <$ 05, see Table 2) for sales–R&D cooperation As H_4 predicts, sales–marketing cooperation in the product development stage has no significant impact on overall NPD project performance (see Table 2)

Consistent with H_5, sales–R&D cooperation during the implementation stage does not have a significant impact on overall NPD project performance More important, as H_6 predicted, the level of sales–marketing cooperation during the implementation stage has a positive but only weakly significant impact on overall NPD project performance (with a path coefficient of 29 [$p \leq$ 1], see Table 2)

The level of marketing–R&D cooperation has a positive impact on overall NPD project performance in all three stages Team size tends to have a positive effect on overall NPD project performance, however, only the effect in the product development stage is significant The coefficients for the industry dummies indicate differences in NPD performance, however, these differences are statistically not significant (see Table 2)

Further Analyses: Market Share

To cross-validate the subjective overall NPD project performance measure, we gathered German market share data from the respondents for the new product in Germany 18 months after its launch We were able to collect these data for 63 of the 106 projects we had analyzed previously We ran similar PLS models to those in Figure 1, but with market share as the dependent variable As Table 3 shows, the key results of the study remain unchanged The only notable differences appear with regard to the effect of sales–marketing cooperation in the product development stage In contrast to our previous finding, the effect of sales–marketing cooperation on market share is positive and significant in the development stage This finding contradicts H_4, which predicted no effect of sales–marketing cooperation in the product development stage on overall NPD project performance

Discussion

To the best of our knowledge, this study is the first large-scale empirical examination of the impact of the cooperation between sales and marketing and between sales and R&D on NPD performance As we mentioned previously, most previous studies in this area have grouped sales within the marketing function However, the current findings support the notion that sales and marketing are distinct func-

TABLE 2
Results of PLS Analyses: Impact of Sales–Marketing and Sales–R&D Cooperation Across NPD Stages on Overall NPD Project Performance

Model/NPD Stage	Model 1: Concept Development		Model 2: Product Development		Model 3: Implementation	
Dependent Variable	Overall NPD Project Performance		Overall NPD Project Performance		Overall NPD Project Performance	
	Estimate	SE	Estimate	SE	Estimate	SE
Main Effects						
Sales–R&D cooperation	26***	17	36**	10	07	
Sales–marketing cooperation	25**	17	01		29*	14
Controls						
Marketing–R&D cooperation	26***	13	27***	15	19*	12
Project budget	– 07		– 05		– 11	
Team size	09		13***	07	22	
Automotive	19		22		35	
Mechanical engineering	– 18		– 19		– 22	
Medical devices	– 08		– 07		– 15	
Consumer products	10		08		03	
Software	– 03		– 04		– 09	
R^2	31		31		25	
Q^2	42		42		40	
N	106		106		106	

*$p \leq$ 1
**$p \leq$ 05
***$p \leq$ 01
Notes We report standard errors only for significant effects (Reinartz, Krafft, and Hoyer 2004)

TABLE 3
Results of PLS Analyses: Impact of Sales–Marketing and Sales–R&D Cooperation Across NPD Stages on Market Share

Model/NPD Stage Dependent Variable	Model 1: Concept Development Market Share		Model 2: Product Development Market Share		Model 3: Implementation Market Share	
	Estimate	SE	Estimate	SE	Estimate	SE
Main Effects						
Sales–R&D cooperation	30**	18	35*	20	27	
Sales–marketing cooperation	34***	13	39***	11	16	
Controls						
Marketing–R&D cooperation	–13		28***	20	30**	16
Project budget	–02		–12		–02	
Team size	–03		09		–05	
Automotive	–06		–12		–15	
Mechanical engineering	11		02		06	
Medical devices	06		18		18	
Consumer products	04		–04		07	
Software	–12		–08		–07	
R^2	24		45		22	
Q^2	N A		N A		N A	
N	63		63		63	

*$p \leq 1$
**$p \leq 05$
***$p \leq 001$
Notes We report standard errors only for significant effects (Reinartz, Krafft, and Hoyer 2004) N A = not applicable

tions and have different roles in NPD Thus, both sales–marketing and sales–R&D cooperation have a strong and positive impact on NPD performance beyond the well-known effect of R&D and marketing cooperation on new product success The results further reveal that the effect of cross-functional cooperation between sales and marketing and sales and R&D varies across stages of the NPD process These findings have important academic and managerial implications

Academic Implications

Several researchers (Gordon and Schoenbachler 1997, Hultink and Atuahene-Gima 2000) have called for empirical evidence examining the effects of integrating sales with other functional departments during the entire NPD process In this regard, this study makes several important research contributions

First, we conceptualize and empirically investigate the cooperation of sales with marketing and R&D across the entire NPD process (i e , concept development, product development, and implementation) Because the results show that sales–R&D cooperation is critical for NPD performance, we conclude that prior empirical studies on cross-functional integration have ignored an important contributor to new product success by subsuming sales and marketing broadly under the term "marketing organization." In contrast, the findings indicate that sales can make important contributions to NPD when interacting with R&D Therefore, the sales function should receive distinctive attention in further NPD research

Second, the phase-specific analyses show that sales–R&D cooperation has a significant, positive impact on new product success during the stages of concept and product development These findings support the prediction from resource dependency theory because the level of interdependencies is highest in these stages of the NPD process (Kim and Wilemon 2002) Sales and R&D need to cooperate effectively in these stages to share relevant information to accomplish the joint NPD task (Ruekert and Walker 1978b) We also found that sales–R&D cooperation had no impact on new product performance at the implementation stage However, this cooperation could be important for a few specific industries (especially those that involve complex and technical products) In these specific cases, R&D may need not only to support customers directly but also to educate the sales force in terms of technical details to allow them to provide better support to customers This notion should be explored in future studies

Third, the stage-specific analyses further reveal that sales–marketing cooperation in the concept development stage is critical for NPD performance An advantage of sales–marketing cooperation during early NPD activities, such as idea generation, is that it brings together two important complementary perspectives (i e , the customer perspective [sales] and the overall strategic product perspective [marketing]) Both perspectives are needed to identify and select the most promising new product ideas and to refine them into product concepts that are accepted by key customers and contribute to the firm's overall strategic and financial objectives

The analyses produced mixed findings with regard to the effect of sales–marketing cooperation in the product development stage When overall NPD project performance is the dependent variable, sales–marketing cooperation at this stage had no significant effect on new product success However, when market share is the dependent variable, sales–marketing cooperation in the product development stage had a strong and significant effect on success This finding may indicate that sales should already be involved with marketing during the product development stage to adequately plan and prepare the actual launch process However, note that, overall, NPD project performance and market share are different indicators of success The NPD performance measure we use is more closely linked to the NPD process and captures different aspects of NPD performance in more detail, however, it is based on a judgment and therefore is more subjective Conversely, market share is more objective and narrow, but it contains more "noise" (i e , there are several other unaccounted-for factors that can influence it) In addition, our sample size for market share is smaller than that for overall NPD project performance, which could have affected the findings Overall, further research is required to examine why these mixed findings occurred

Finally, it is noteworthy that the sales–marketing cooperation had only a weak impact at the implementation stage In general, when academics, salespeople, or sales mangers talk about the lack of cooperation between marketing and sales, they are referring to the implementation stage A general belief is that a lack of cooperation at this stage can cause a "good" product to fail This study finds a positive impact for both project performance and market share, but these relationships were either weakly significant or even nonsignificant This may indicate that it is particularly during the earlier stages of NPD that sales–marketing cooperation is critical and that it has less of an impact during later stages of the NPD process

Managerial Implications

Historically, the successful generation of new products has been linked to the effective cooperation between marketing and R&D However, the results show that sales plays a vital role and that organizations need to carefully manage the cooperation of sales with marketing and R&D The cooperation of marketing and R&D with sales conveys critical customer information to the NPD process, thus improving the likelihood of new product success Therefore, managers should understand that integration of sales into the NPD process is an effective way to bring the "voice of the customer" into the firm

This research further shows that managers need to foster cross-functional cooperation among sales, marketing, and R&D at specific stages of the NPD process One finding is that the cooperation of sales with R&D and marketing is critical at the early stage of concept development Up-front activities, such as generating and assessing ideas, deciding the critical product features, and determining the product's value proposition, should involve the sales function

Sales–marketing cooperation is also important, particularly in the early stages of NPD During concept development, sales–marketing cooperation is required to generate ideas that not only are closely aligned with customer needs but also have a high market potential Sales–marketing cooperation in the later stages of the NPD process is less critical for new product success Thus, managers are not well advised if they adhere to the popular view that fostering sales–marketing cooperation in the implementation stage is the key to success Instead, managers need to focus on facilitating cooperation between sales and marketing at the beginning of the NPD process A misalignment of marketing and sales in the early stages of NPD cannot be overcome later in the NPD process

The results suggest that managers need to focus on improving the cooperation among sales, marketing, and R&D in the NPD process However, diverging incentive systems and cultural barriers (Homburg and Jensen 2007) are only some of the challenges managers face when trying to integrate sales with other functional departments Therefore, managers need to take proactive, strong measures to bring the sales function into the NPD process A promising way could be to make representatives from sales part of a cross-functional team, at least for parts of the NPD process for which the cooperation within the triangle of sales, marketing, and R&D is critical The benefits of the joint team with all three parts of the triangle should be greater than the sum of the one-by-one relationships

Limitations and Further Research

This study has some limitations that offer opportunities for further research First, this study examined specific NPD activities on a relatively broad level Further research is needed to examine the specific processes by which these types of information are input into the NPD process For example, some ways of collecting and reporting customer information from sales may be more effective than others

Second, the study focused only on the cooperation among sales, marketing, and R&D However, it is conceivable that the integration of other organizational functions, especially operations (e g , purchasing, manufacturing, design), is also required for successful NPD Therefore, subsequent studies should extend the framework proposed in this study and analyze the effect of sales cooperation with these other operational functions on NPD performance

Third, although we sampled a variety of business-to-business and business-to-consumer industries, the sample included only German companies Thus, further research is needed to determine the extent to which these findings extend to other countries However, note that the hypotheses would be the same for other industrialized countries

Finally, because cross-functional cooperation of sales with R&D and marketing matters for NPD performance, it is important for academics and managers to understand more about the antecedents that effectively integrate the sales function into the NPD process Existing work on antecedents of cross-functional cooperation has focused entirely on the relationship between R&D and marketing (Griffin and Hauser 1996) Thus, conceptual and empirical work is required to identify effective mechanisms to foster cooperation between sales and R&D and sales and marketing An appropriate empirical study would need to take a multilevel approach because some of the potential integration mechanisms, such as incentive systems, corporate culture, and organizational structure, are firm-level constructs that have an impact on cross-functional cooperation at the project level

Conclusion

This research shows that it is necessary to distinguish the sales and marketing functions to better understand the link between the "market-oriented areas" and R&D in an organization with regard to NPD Thus, the focus of research in this area needs to shift from studying the bilateral relationship between marketing and R&D to examining the triangle relationship among sales, marketing, and R&D to improve the NPD process However, the effect of cross-functional cooperation among sales, marketing, and R&D varies across stages of the NPD process Sales–R&D cooperation in the concept and product development stages is critical for successful NPD Sales–marketing cooperation is important in the concept development stage and has surprisingly less impact in the implementation stage These new and detailed insights will help academics better understand the nature and effect of cross-functional integration in NPD and will help managers take the appropriate and actionable measures to lower failure rates and to boost NPD performance

Appendix
Description of Measures

Cross-Functional Cooperation

The scales for the cooperation between marketing and sales, marketing and R&D, and sales and R&D were formative constructs and were rated on a seven-point Likert scale, anchored by 1 = "strongly disagree" and 7 = "strongly agree" Cooperation was defined and explained to respondents as the level of involvement and information sharing

A respondent from sales assessed his or her cooperation with R&D and marketing for Project X A respondent from marketing assessed his or her cooperation with R&D and sales for Project X A respondent from R&D assessed his or her cooperation with sales and marketing for Project X The specific items were as follows

> In the NPD Project X, I (e g , respondent from sales) cooperated with (e g , R&D) during the following NPD activities
>
> Stage 1 Concept Development
>
> - Planning and formulating of the new product goal and strategy
> - Idea generation
> - Analysis of trends, market changes, and potentials
> - Assessment and selection of new product ideas
> - Assessment of needed funds, times, and risk related to the new product development project
> - Preparation of the written product concept
> - Determination of desired product features
>
> Stage 2 Product Development
>
> - Actual development of the prototype
> - Preparation of the commercialization concept
> - Execution of prototype tests with customers
> - Selection of customers for test-marketing reasons
> - Execution of test-marketing measures before market introduction of the new product
> - Final evaluation of market acceptance before market introduction of the new product
> - Determination of the overall strategy before introducing the new product into the market
>
> Stage 3 Implementation
>
> - Market introduction of the new product (selling, advertising, distribution)
> - Product training for customers
> - Customer enquiries/after-sales support
> - Monitoring competitors' reactions and their strategies

Overall NPD Project Performance (adapted from Song and Parry 1997; Cronbach's $\alpha = .90$)

Overall NPD project performance was assessed by a fourth and independent informant (project leader of Project X) To what extent do you agree with the following statements related to the success of the new product (Project X)

1 How successful was this new product from an overall profitability standpoint? (1 = "a great financial failure," and 7 = "a great financial success")
2 Relative to your firm's other new products, how successful was this new product in terms of revenues? (1 = "far less than our other new products," and 7 = "far greater than our other new products")
3 Relative to your firm's other new products, how successful was this new product in terms of profits? (1 = "far less than our other new products," and 7 = "far greater than our other new products")
4 Relative to your firm's objectives, how successful was this new product in terms of profits? (1 = "far less than our objectives," and 7 = "far exceeded our objectives")

Market Share

What market share in Germany did the new product (Project X) achieve 18 months after its market introduction (approximately)?

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Himanshu Mishra, Arul Mishra, & Dhananjay Nayakankuppam

How Salary Receipt Affects Consumers' Regulatory Motivations and Product Preferences

In this article, the authors find that consumers' preferences change as a function of their temporal distance from the receipt of their last salary The authors propose and test that when consumers have just received their salary ("the near-salary condition"), they exhibit promotion motivations in their product preferences However, they exhibit prevention motivations in their product preferences when significant time has elapsed since their last salary receipt ("the far-from-salary condition") The authors collected data from two longitudinal studies to validate these findings and to test the underlying process Using actual purchase behavior and collecting product preference during a one-month period, the authors show that consumers' product preferences change in response to temporal distance from their last salary receipt The findings suggest to managers that the best time to promote products or messages with a promotion appeal is near to consumers' last salary receipt and that the best time to promote products or messages with a prevention appeal is far from consumers' last salary receipt

Keywords regulatory focus, salary receipt, cyclical preferences, promotion focus, prevention focus, motivation

Consider the following situation John is evaluating two equally priced fitness programs The first program emphasizes physical activity to improve healthfulness, and the second focuses on reducing the intake of unhealthful foods to improve healthfulness Which program is John likely to prefer, given that both options are priced the same? We suggest that John's preference is likely to depend on *when* the question is presented to him Specifically, we propose that his preference, at the moment he faces the choice, will be determined by whether he has just received his salary or significant time has elapsed since his salary receipt If John has just received his salary, he is likely to prefer the first option, conversely, if a lot of time has elapsed since he received his salary, he is likely to prefer the second option

John's preferences are not driven merely by liquidity constraints, because the price of both options is the same and the only difference is the elapsed time since his last salary receipt Why should John's preference vary with changes in temporal distance from last salary receipt? Drawing on the notion of regulatory focus motivations, we suggest that when consumers are temporally near to their last salary receipt, they display motivations that are promotion oriented and prefer products with promotion attributes (e g , the first fitness program, which emphasizes physical activity to attain better health) However, as they temporally move away from salary receipt (i e , when significant time has elapsed since the last salary receipt), their motivations become more prevention oriented, and they prefer products with prevention attributes (e g , the second fitness program, which focuses on reducing the intake of unhealthful foods to prevent loss of health) In summary, we show that the elapsed time since last salary receipt engenders different regulatory focus motivations that influence consumer preferences

We suggest that the shift between promotion and prevention motivation, as a function of temporal distance from the last salary receipt, occurs because consumers can achieve satisfaction either by aspiring to attain more or by striving to avoid losses The receipt of salary provides people with a sense that they have the required means to pursue their aspirations, creating a motivational state of promotion Conversely, if people are temporally far from their last salary receipt, the most salient way to attain satisfaction and happiness is by maintaining what they have, creating a motivational state of prevention Therefore, distance from last salary receipt creates promotion or prevention motivations and consequently influences consumer preferences For the purposes of this article, we use the term "near salary" to define the period when a person has just received his or her salary Similarly, we use the term "far from salary" to define the period when many days have elapsed since salary receipt In addition, we define "salary receipt" as the actual receipt of salary, not anticipated receipt That is, a person who is a couple of days away from the next (anticipated) salary receipt is not in the near-salary condition, but a person for whom a couple of days has elapsed

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since salary receipt is We use these two terms throughout to maintain consistency [1]

Both economics and marketing literature allude to the importance of income in understanding consumer preferences and consumption patterns Economic theories support the idea that current consumption patterns are largely dependent on current earnings and vary with changes in them (Campbell and Mankiw 1991, Carbone and Hey 2004) Marketing researchers acknowledge the influence of changes in income on consumer preferences and devise segmentation schemes consistent with these changes However, most existing theories adopt a relatively long-term perspective when considering consumer preferences We hypothesize that consumer preferences can change cyclically as a function of temporal distance from last salary receipt

In the next section, we briefly discuss the findings of regulatory focus theory that are relevant to the current research, paying particular attention to findings on regulatory fit We then connect these findings to our conceptualization, present the hypotheses, and discuss alternative accounts Finally, we test the proposed hypotheses across two longitudinal studies

Theoretical Development and Conceptualization

Literature Review

Regulatory focus theory posits that people can achieve satisfaction by adopting either an accomplishment-oriented, promotion-focused strategy or a security-oriented, prevention-focused strategy (Higgins 1997, 1998, Pham and Higgins 2005) Although both promotion- and prevention-focused strategies are goal-attainment strategies, they are distinct because a promotion focus involves sensitivity to the presence or absence of positive outcomes (emphasizing advancement, attainment, and accomplishment), while a prevention focus involves sensitivity to the presence or absence of negative outcomes (emphasizing caution and protection) (Pennington and Roese 2003) Similarly, Liberman and colleagues (1999) observe that in situations involving a choice between the status quo (a conservative option) and a new course of action (a more risky option), promotion-focused people tend to choose the new course of action, while prevention-focused people tend to choose the status quo Although both motivations are said to coexist within a person, one or the other may be chronically or temporarily more accessible To make regulatory motivations temporarily more accessible, people can be primed with a promotion (prevention) focus by asking them to think about their aspirations (duties) People whose aspirations are made accessible become eager to capture as many opportunities as possible, while those whose "oughts" are made more accessible become interested in protecting themselves from potential threats (Pham and Avnet 2004)

Regulatory focus theory has produced findings on regulatory fit that are relevant to the current research Regulatory fit suggests that whenever there is a fit between a person's motivations and the task (e g , product choice), the person experiences a subjective feeling of "rightness" that is used as a diagnostic aid (Aaker and Lee 2001, 2006, Avnet and Higgins 2006, Higgins 2000, Kruglanski 2006) The regulatory fit principle predicts that outcomes consistent with a person's self-regulatory motivation (regulatory fit) are considered relatively more important than outcomes that are inconsistent with the motivation (regulatory nonfit) (Chernev 2004a, Higgins 2000) A match between a person's motivation and a task can lead to regulatory fit, while a mismatch results in nonfit (i e , the regulatory fit literature views fit or nonfit as dichotomous stages, see Aaker and Lee 2001, Higgins 2000) Regulatory fit can have a profound influence on how people react to persuasive messages or assess product attributes

Research has shown that an independent self-view is related to goals of achievement and success (promotion focus), while an interdependent self-view is related to goals of obligation and responsibility (prevention focus) (Lee, Aaker, and Gardner 2000) Subsequent research has demonstrated that participants whose independent self-view has been activated are more persuaded by promotion-focused advertising messages (e g , grape juice enhances energy levels) while participants whose interdependent self-view has been activated are more persuaded by prevention-focused advertising messages (e g , grape juice reduces the risk of heart disease) Because of regulatory fit, matching message information with an accessible self-view leads to greater evaluations and persuasion (Aaker and Lee 2001)

In a product purchase context, product claims can be framed to achieve either a promotion- or a prevention-focused goal, offering the product as a means to achieve that specific goal Products with promotion-focused attributes are offered as a means to achieve a promotion-focused goal, while products with prevention-focused attributes are presented to achieve prevention-focused goals (Mogilner, Aaker, and Pennington 2008) In one study, Zhou and Pham (2004) find that participants whose promotion motivations are made more accessible prefer products with promotion-focused attributes (grape juice promoting high energy, toothpaste with whitening ability, and chocolate cake high on the promotion attribute of taste), while participants whose prevention motivations are made more accessible prefer products with prevention-focused attributes (grape juice reducing the chance of heart disease, toothpaste with cavity prevention, fruit salad high on the prevention attribute of health)

Conceptualization

Drawing from these finding on regulatory focus, we suggest that salary receipt, a regular and important event in most people's lives, is accompanied by a feeling of liquidity because of the availability of funds [2] Such a feeling induces a promotion focus in people, making them emphasize aspirations, gains, and desires However, as people move away from their salary receipt, this promotion focus decreases as a result of resource depletion and makes people relatively more prevention focused That is, instead of striving to achieve more, they try to avoid losses and maintain what they already have (Chernev 2004b, Liberman et al 1999)

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[1] Although we used a continuous measure to estimate a person's temporal distance from last salary receipt, for ease of exposition, we use the terms "near salary" and "far from salary"

[2] Note that we distinguish between felt liquidity (a feeling of having resources that make a person aspiration oriented) and actual liquidity (we call this the "liquidity-alone account" and define it as disposable income—this is related to purchasing power)

Therefore, in the near-salary condition, people are more likely to prefer products with promotion-focused attributes (e g , toothpaste with whitening ability) because they perceive a regulatory fit between their promotion-focused aspirations and the promotion-focused product attributes In the far-from-salary condition, people are likely to prefer products with prevention-focused attributes (e g , toothpaste with cavity protection), again because of the regulatory fit between their loss-avoiding prevention motivations and the product attributes Therefore, we propose the following hypotheses

> H_1 As people move temporally away from salary receipt, they are more likely to prefer products with prevention-focused attributes than those with promotion-focused attributes
>
> H_2 As people move temporally away from salary receipt, their promotion motivation reduces and their prevention motivation increases

In Study 1, we use the choice of "aspired" versus "ought" products, as observed from people's actual shopping behavior, to test H_1 We also measure participants' regulatory motivations to test H_2 In Study 2, we test H_1 using preference for products with promotion- versus prevention-focused attributes

We tie in the findings with research on mental accounting, which suggests that people create different mental accounts to compartmentalize their consumption activities Thaler (1985, 1999) suggests that this creation of mental accounts makes it easier for people to allocate resources for different activities or to achieve different goals It also allows people to resolve conflicting goals and categorize their purchase and consumption activities (Siemens 2007) Connecting work on mental accounting to regulatory motivations, Zhou and Pham (2004) demonstrate that people rely on two mental accounts—one based on promotion motivations and the other based on prevention motivations—to resolve financial decisions A promotion account would encourage investment in stocks, while a prevention account would encourage investment in bonds In a similar vein, it can be argued that even for consumption decisions, people might have two mental accounts—a promotion-based account that is more influential in the near-salary condition and a prevention-based account that is activated in the far-from-salary condition We acknowledge that temporal distance from last salary receipt may engender different mental accounts such that consumers adopt promotional accounts near to their salary receipt and prevention accounts far from their salary receipt However, such an explanation is consistent with our view that regulatory focus drives the adoption of these mental accounts

In the next section, we present an alternative account that could potentially explain our findings We discuss this account and then present the findings from two studies that test the efficacy of the proposed regulatory focus–based account and the alternative account

Liquidity-Alone Account

Prior research has demonstrated that household expenditures rise and fall between paychecks in correlation with the household's increasing and decreasing wealth (Huffman and Barenstein 2005) On the basis of this research, it can be argued that when consumers are in the near-salary condition, they have more money (liquidity) and thus can indulge in the purchase of expensive products Conversely, when they are in the far-from-salary condition, they have less money and thus must purchase inexpensive products In summary, the liquidity-alone account proposes that the preference for different products in the near-salary and far-from-salary conditions is entirely driven by available money and that there is no role for regulatory focus motivations

To test the efficacy of the liquidity-alone account and to gain support for the regulatory focus–based account, we adopted a two-pronged approach across the two longitudinal studies First, to address the concern that liquidity alone is sufficient and that regulatory motivations have no role, the products used in Study 2 varied only in one attribute description that mapped onto regulatory focus They were explicitly described as identical in the other aspects of price and volume (toothpaste with whitening [promotion] or toothpaste with cavity protection [prevention], both of which cost $4 25) Although the liquidity-alone account predicts that people buy expensive products when they are near to their salary receipt and buy inexpensive products when they are far from their salary receipt, it does not make any predictions about what kind of attributes people would prefer if price were held constant Conversely, the regulatory focus–based account predicts that even if the prices of the products are identical and only their promotion or prevention attributes differ, people's preferences would change accordingly

Second, we propose that temporal distance from last salary receipt engenders a particular regulatory focus that alters product preferences Specifically, we suggest that in the near-salary condition, people are more promotion focused, but when time has elapsed since last salary receipt, their motivation becomes more prevention focused In Study 1, we measure regulatory motivations over time to demonstrate that these motivations change as a function of temporal distance from salary Moreover, we test whether these regulatory motivations mediate the influence of temporal distance from last salary receipt on product preferences Such a pattern of results would render the liquidity-alone account less plausible because the liquidity-alone account neither predicts changes in regulatory focus motivations as a person moves from being temporally near to salary receipt to being away from salary receipt nor predicts that these changes can mediate people's preferences

In summary, we do not contest that salary receipt influences perceptions of liquidity Instead, we argue that the liquidity-alone account cannot predict the pattern of results that we propose We suggest that perceived liquidity can have more subtle and powerful influences through the changes it engenders in regulatory focus, such that identically priced products that differ only in their regulatory focus attributes will hold a different appeal at different temporal distances from salary receipt To test the proposed regulatory focus–based account and the alternative account, we conducted two longitudinal studies

Study 1: Demonstration in Actual Purchase Behavior

Study 1 had several objectives First, we wanted to test the proposed effect (H_1) with actual product purchase behavior, so we collected product purchase information from the participants Second, to test H_2, we measured changes in participants' regulatory motivations (using a regulatory focus scale) to observe whether these motivations changed as people moved temporally away from their last salary receipt The third objective was to observe whether the regulatory motivations engendered by temporal distance from last salary receipt, as measured through the regulatory focus scale, mediated consumer preferences for promotion-focused versus prevention-focused products Demonstrating that changing regulatory motivations predict product preference would support the regulatory focus–based account and discount the liquidity-alone account

Method

We divided each of the two longitudinal studies into two phases The first phase was largely similar for both studies, we describe this next We refer back to this procedure in Study 2 Data were collected during a one-month period, and study months did not correspond with calendar months Only participants who had regular employment took part in the two longitudinal studies

The first phase was conducted using computers Participants completed a few filler tasks that recorded their opinions on several products and advertisements Embedded in the filler tasks were questions about when and how many times a month participants received their salaries (monthly, bimonthly, and weekly) Data on the dates of salary receipts enabled us to calculate a temporal distance from last salary receipt for every day a participant was taking part in the study Because participants could be paid over different periods, the distances were represented as a percentage measure Thus, someone paid monthly was 25% away from salary receipt seven days after getting paid, and someone paid bimonthly was 50% away from salary receipt seven days after getting paid We also collected data on when participants paid their largest bills in terms of dollars (e g , rent, car payments, credit card installments), and we used this to calculate temporal distance from bill payment We measured temporal distance from bill payment to examine whether this financial transaction had any influence on product preference and found that it did not have a significant influence in either of the two studies

Sixty-one regularly employed participants from a large southwestern university took part in Study 1 in exchange for two course credits (average age was 24 years, 30% were women, 41 4% were married) For the second phase of Study 1, participants completed a questionnaire each time they came back from any shopping trip for the next 30 days The shopping trip could be to the local mall, the grocery store, or a retail store (e g , Wal-Mart) The study provided us with a longitudinal measure of the products the participants bought during that time At the end of each week, participants left that week's completed questionnaire in a mailbox in the marketing department, this ensured that they filled out the questionnaires regularly Each participant was assigned a unique respondent number to preserve the anonymity of their responses

Measures

We obtained three kinds of measures from the participants after each of their shopping trips First, participants were asked to categorize the items they bought into two categories—items they aspired to buy and items they felt they ought to buy Participants were instructed that if they bought a product because they aspired to buy it for pleasure, advancement, and happiness, they should list it in the "aspired" category (conceptually, a promotion-focused purchase) Conversely, if a product was one they felt they ought to buy to fulfill duties and responsibilities, they should list it in the "ought" category (conceptually, a prevention-focused purchase)

Second, participants filled out a six-item regulatory focus scale that we adapted from previous research (Kruglanski et al 2000, Lockwood, Jordan, and Kunda 2002) The scale mapped onto the regulatory motivations the participants felt each time they filled out the questionnaire (for the scale items, see Table 1) The scale helped us understand how the regulatory motivations changed as a function of temporal distance from last salary receipt

Third, participants were asked whether they found the aspired products to be more expensive than the ought products for each of their shopping trips We used this measure to investigate whether participants' preferences for aspired versus ought products were driven by cost differences—that is, whether participants bought aspired products in the near-salary condition because they perceived these products as more expensive and, thus, more affordable when they had just received their salary and whether participants bought

TABLE 1
Six Item Regulatory Focus Scale: Study 1

−4 ——— ——— ——— ——— ——— ——— ——— 4

Strongly disagree **Strongly agree**

1 Right now, I feel I should pay more attention to my duties and obligations, even at the expense of my aspirations
2 I think it is important to avoid making mistakes, even if it means not acting on possible but risky gains
3 I think preserving what one has is more important in life than gaining more
4 I think it is very important to pursue one's hopes and dreams at all costs
5 One should be willing to stake everything one has in order to pursue one's desire
6 I would regret missed opportunities more than actions I take that were mistakes in hindsight

ought products in the far-from-salary condition because they considered these products less expensive and, thus, more affordable when they were feeling resource depleted

Results

We used a hierarchical linear modeling (HLM) procedure to analyze the data The HLM procedure is useful when lower-level units are nested within higher-level units In the studies we report herein, participants responded to questions several times during a one-month period, so from the standpoint of HLM, each response occasion served as a lower-level unit (Level 1) that was nested within each individual participant (Level 2)

Purchase of aspired and ought products We formed an index to calculate aspired products as a proportion of total products purchased at each shopping trip

$$\text{Proportion of aspired products} = \frac{\text{number of aspired products}}{\left(\text{number of aspired products} + \text{number of ought products}\right)}$$

A higher proportion of aspired products indicated a greater promotion motivation

The use of elapsed time since last salary receipt as an explanatory variable revealed a significant main effect for temporal distance from last salary receipt on the proportion of aspired products (b = – 2, t(147) = –2 37, p < 02) The negative regression coefficient suggests that as the temporal distance from last salary receipt increased, participants' purchase of aspired products decreased, consistent with the notion of a decline in preference for promotion-focused products and in support of H_1 Although the average shopping basket was large enough to consider proportion of aspired products a continuous measure, it could still be argued that these data should be viewed as count data To address this concern, we reanalyzed the data using a Poisson link function The analyses yielded substantially similar results We found a significant, negative coefficient for salary distance (b = –1 9, t = 4 76, p < 0001)

There was no influence of bill distance on the purchase of aspired products This finding argues against the liquidity-alone account because paying bills would reduce liquidity and thus influence ability to buy products

Temporal changes in regulatory focus We rescaled and averaged participants' responses to the six-item scale (Cronbach's α = 76) to form a single index that reflected their relative promotion focus Subsequently, we again used HLM analyses to examine the influence of temporal distance from last salary receipt on changes in relative promotion focus

The addition of temporal distance from last salary receipt as an explanatory variable revealed a significant main effect for temporal distance from last salary receipt on promotion focus (t(145) = –2 64, p < 009) The regression coefficient on temporal distance from last salary receipt was negative (b = – 76), which suggests that as the temporal distance from last salary receipt increased, promotion focus decreased This finding provides support for H_2

Notably, the influence of temporal distance from last salary receipt on the proportion of desired products purchased was marginally mediated by the measured promotion focus (Sobel test statistics = –1 76, p = 07) To obtain Sobel test statistics, we ran two analyses First, we estimated the influence of temporal distance from last salary receipt on measured promotion focus Second, we estimated the joint influence of temporal distance from last salary receipt and measured promotion focus on the proportion of aspired products (this did not include the interaction term) This analysis yielded the following $b_{\text{temporal distance from last salary receipt}}$ = – 17, t(144) = –1 99, p < 04, and $b_{\text{promotion focus}}$ = 04, t(144) = 2 27, p < 02 The mediation analysis lends credence to the notion that the liquidity-alone explanation cannot account for the changes in people's preferences Instead, the influence of temporal distance from last salary receipt on people's preferences is mediated through changes in regulatory focus

Are aspired products perceived as more expensive than ought products? Note that when participants were asked whether they found the aspired products to be more expensive than the ought products, 52 4% said yes, and 47 6% said no ($\chi^2(1)$ = 43, p > 5) Moreover, distance from last salary receipt did not influence whether participants perceived aspired products as more expensive than ought products (t(125) = 68, p = 49)

Discussion

Study 1 tested the proposed regulatory-based account in the context of actual product purchase The results indicated that as temporal distance from last salary receipt increased, the proportion of aspired products decreased, in support of H_1 By using a direct measure of regulatory motivations over time, the study demonstrates that as temporal distance from last salary receipt increases, promotion motivation declines, in support of H_2 Note that the regulatory motivations mediated the purchase of aspired products, demonstrating that the temporal distance from last salary receipt affects product preferences through changes in regulatory motivations The mediation by regulatory motivations also provides evidence that liquidity alone cannot explain product preferences

We conducted Study 2 to provide further evidence for the regulatory focus–based account by priming regulatory motivations As we suggested previously, regulatory motivations can be made accessible temporarily through a priming manipulation Consider a person who has just received his or her salary (near-salary condition) and is presented with a product that has promotion-focused attributes Literature on regulatory fit would suggest that this scenario will result in a "subjective feeling of rightness," or a fit between the person's promotion motivations and the product's promotion-focused attributes, which will increase preference for the product Existing literature on regulatory fit defines it as dichotomous stages in which either fit or nonfit occurs, it does not define regulatory fit to be a continuum of low, medium, or high fit (Aaker and Lee 2001, Higgins 2000) Therefore, trying to enhance promotion motivations further with a promotion prime will not further increase regulatory fit Therefore, we expect that near-salary-condition participants will demonstrate a similar preference for promotion-focused products both when promotion motivations are not accessible (i e , the control condition) and when promotion motivations are made accessible (i e , promotion-primed condition) However, prevention-primed participants should display less preference for promotion-focused products even when they are near to salary receipt (i e , the prevention prime should counter the influence of being near to salary receipt and make participants more prevention oriented even in the near-salary condition because of regulatory nonfit)

Using the same rationale, we predict that participants in the far-from-salary control condition will show a similar preference for products with prevention-focused attributes as participants in the far-from-salary condition with an accessible prevention focus Again, we predict this because the regulatory fit caused by salary-induced prevention motivations and products with prevention attributes cannot be enhanced further by making prevention motivations more accessible by priming However, even when promotion-primed participants are far from salary receipt, they should display less of a preference for products with prevention-focused attributes Formally,

> H_3 In the near-salary (far-from-salary) condition, people with accessible promotion (prevention) motivations will display preferences similar to people in the control condition, however, their preferences will be significantly different from people with accessible prevention (promotion) motivations

To test H_3, we manipulated regulatory motivations with a priming mechanism in Study 2

Study 2: Priming Regulatory Motivations

Pretests

The products used in Study 2 were based on the results of a pretest In the pretest, participants were primed with either a promotion focus (they were asked to write down two current and two past hopes, aspirations, and dreams) or a prevention focus (they were asked to write about two current and two past duties, obligations, and responsibilities) (Pham and Avnet 2004) Next, they indicated their preference between two brands in various product categories that were described with either prevention or promotion attributes but were identical in the other aspects of price and volume Brands that were preferred by promotion-primed (prevention-primed) participants were classified as promotion-focused (prevention-focused) brands Promotion (prevention) brands selected for the final studies were those that received the most extreme preference by promotion-primed (prevention-primed) participants

Furthermore, we conducted a separate test with 36 participants to ensure that the two brands were deemed to be similar in terms of their value and importance of the attributes Participants were shown the different product categories with the two brands that differed only on their regulatory attributes The two brands were described as either promotion or prevention focused (for a detailed description of the product attributes, see Table 2) Participants rated the attributes of the two brands as being of equal value (importance) or not on a 1–9 scale A rating of 1 indicated that Brand A's attributes had more value (importance), 5 indicated equal value (importance), and 9 indicated that Brand B's attributes had more value (importance) The results revealed no statistically significant differences in terms of attribute value or importance for the two brands in each of the product categories tested The detailed results appear in Table 2, along with the product descriptions

Main Study

Study 2 primed participants with promotion or prevention motivations or assigned them to a control condition We designed the study to achieve three main objectives First, we wanted to provide further support for H_1, which predicted that as people move away from their last salary receipt, their preferences for products with promotion-focused attributes decrease The inclusion of a control condition provided an ideal means of testing H_1 and observing changing preferences as participants moved from being near to their salary receipt to being far from their salary receipt Second, including a control condition in this study provided us with a way to test H_3 In line with the rationale for H_3 and using regulatory fit theory, we expect that participants in the near-salary control condition and the near-salary promotion-primed condition will demonstrate similar preferences for promotion-focused products However, even when prevention-primed participants are near to their salary receipt, they should display less preferences for promotion-focused products (i e , the prevention prime should counter the influence of being near to salary receipt and make participants more prevention oriented even in the near-salary condition because of regulatory nonfit) Third, and using a similar reasoning based on regulatory fit, we predict that participants in the far-from-salary control condition will show similar preferences as participants in the far-from-salary prevention-primed condition for products with prevention-focused attributes However, even when promotion-primed participants are far from their salary receipt, they should display a lesser preference for products with prevention-focused attributes To summarize, we predict that the promotion- and prevention-primed conditions will have a shallower slope than the control condition because the promotion prime results in participants displaying a promotion motivation even when they are far from their salary receipt, which attenuates the influence of being far from their salary receipt Similarly, a prevention prime makes them prevention oriented even when they are in the near-salary condition, which attenuates the influence of being near to their salary receipt

Method One hundred fifty-two regularly employed participants enrolled in an introductory marketing course at a large southwestern university took part in the month-long study to earn two course credits (mean age was 23 88 years, 32 24% were women, 49 31% were married) The first session was conducted exactly as in Study 1 Participants provided information about salary receipt and other demo-

TABLE 2
Description of Products Used in Study 2

Week	Product	Brand A	Brand B	t-Test[a] for Difference Between Brand A and Brand B	
				Value t(36)	Importance t(36)
1	Study lamp (both study lamps cost $9)	Provides light that soothes and protects the eyes (prevention)	Has aesthetic value that enhances the room décor (promotion)	– 59***	– 65***
	Cereals (both cereals cost $4 50)	Has healthful raisin bran (prevention)	Has tasty honey-flavored rolled oats (promotion)	– 51***	– 05***
2	Mouthwash (both brands of mouthwash cost $5 65)	Provides tartar protection (prevention)	Provides fresh breath (promotion)	38***	– 08***
	Car polish (both car polish cost $7)	Gives the car a shining, glossy look (promotion)	Prevents car paint from chipping (prevention)	1 11**	1 37*
3	Hand soap (both hand soaps cost $3 50)	Has antibacterial agents to prevent infection (prevention)	Has shea butter to keep skin soft (promotion)	–1 33*	–1 49*
	Laundry detergent (both laundry detergents cost $9 50)	Makes clothes soft and fresh smelling (promotion)	Increases the life of clothes (prevention)	32***	1 14**
4	Snacks (both snacks cost $4 50)	Chocolate cake (promotion)	Fruit salad (prevention)	21***	74**
	Sunscreen lotion (both sunscreen lotions cost $9)	Protects skin from ultraviolet rays (prevention)	Gives the skin a smooth, glowing look (promotion)	–1 59*	–1 46*

$^{*}p > 1$
$^{**}p > 25$
$^{***}p > 5$
[a]T-test assesses whether value or importance ratings between Brand A and Brand B were significantly different from the scale midpoint (i e , 5)

graphic variables At the end of the first phase of Study 2, participants were given a large envelope that contained four small sealed envelopes and the instructions to complete the second phase of the study They were told that we were interested in studying consumers' buying patterns, so we would be collecting information about their product preferences for a month During the second phase, participants opened the appropriate envelope for each week Each of the four small envelopes contained a questionnaire that participants completed each week, and each of the four questionnaires contained two parts The first part consisted of the priming manipulation, and the second part consisted of product preference measures At the end of each week, for four weeks, the participants left that week's completed questionnaire in a mailbox in the marketing department Participants were asked to return the questionnaires at the end of each week to ensure that they filled out the questionnaires regularly Each participant was assigned a unique respondent number that was written on all questionnaires and envelopes to ensure the anonymity of their responses

The first part of the questionnaire primed participants with either promotion- or prevention-focused motivations One group of participants was primed with a promotion focus in the first and second weeks and with a prevention focus in the third and fourth weeks A second group of participants was primed with a promotion focus in the third and fourth weeks and with a prevention focus in the first and second weeks A third group was not primed and acted as a control group In line with prior work (e g , Pham and Avnet 2004), participants assigned to the promotion prime were asked to think about their past hopes, aspirations, and dreams and to describe two of them Then, they were asked to think about their current hopes, aspirations, and dreams and to describe two of them Participants assigned to the prevention prime were first asked to think about their past duties, responsibilities, and obligations and to describe two of them Then, they were asked to think of their current duties, responsibilities, and obligations and to describe two of them

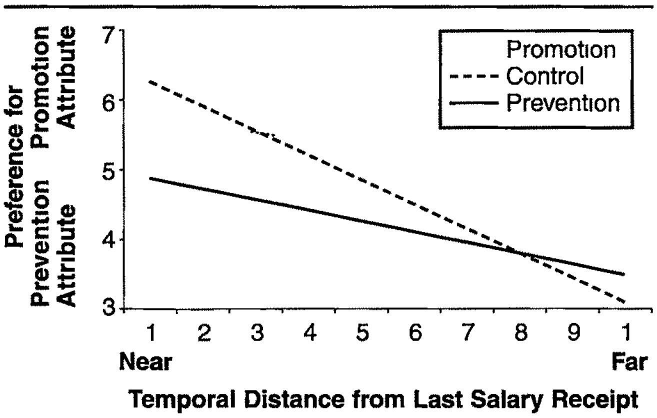
Measures The second part of each questionnaire contained information about products and elicited participants' preferences for each product (for a description of the product categories, see Table 2) As we discussed previously, the products were selected on the basis of a pretest Participants returned one envelope at the end of each week for a period of four weeks Participants provided responses four times over the next four weeks, assessing their relative preference for products that had either a promotion- or a prevention-focused attribute Each week, participants were presented with two product categories consisting of two brands that varied only in promotion- or prevention-focused attributes Participants indicated their preference between the brands on a nine-point scale (1 = "high preference for Brand A," and 9 = "high preference for Brand B"). We counterbalanced the promotion and prevention attributes for the two brands and reverse-coded them appropriately for the analysis. We conducted a lucky draw at the end of each week. Thus, four "lucky winners" received their preferred brands from the two product categories.

Participants indicated their preference between a promotion-focused and a prevention-focused brand for each product category. We then averaged the preferences across the two product categories each week. This average value served as the dependent variable, such that a higher value indicated a promotion-focused preference and a lower value indicated a prevention-focused preference.

Results and discussion. We ran a series of hierarchical linear models, using preference for promotion- versus prevention-focused products as the dependent variable and temporal distance from last salary receipt and the priming manipulation as the independent variables. A main effect emerged for distance from last salary receipt ($b = -2.1$, $F(1, 936) = 66.65$, $p < .0001$). The main effect for salary distance was due to the decline in preference for promotion-focused products as temporal distance from salary increased, in support of H_1. A main effect for the priming manipulation also emerged ($F(2, 89) = 16.8$, $p < .0001$). The main effect for the priming manipulation was due to promotion-primed participants showing a greater preference for promotion-focused products ($M = 5.2$) than the control group ($M = 4.6$, $t(89) = 2.64$, $p < .01$) and the control group having a greater preference for promotion-focused products than the prevention-primed group ($M = 4.2$, $t(89) = 2.3$, $p < .02$). However, note that these main effects were qualified by a salary distance × priming manipulation interaction ($F(2, 934) = 7.25$, $p < .001$). We graph the nature of this interaction in Figure 1.

Decomposing this interaction revealed several noteworthy patterns. We find a significant influence of salary distance on product preference for each of the conditions (for promotion-primed participants, $b = -1.29$, $t(153) = -2.41$, $p < .01$; for prevention-primed participants, $b = -1.91$, $t(169) = -3.22$, $p < .001$; and for control condition participants, $b = -3.36$, $F(1, 330) = 63.76$, $p < .0001$). The pattern of preference was the same; participants in each of the three conditions preferred products with promotion-focused attributes more in the near-salary condition than in the far-from-salary condition.

FIGURE 1
Influence of Priming Promotion and Prevention Focus: Study 2



Consistent with the regulatory fit theory and H_3, we received support for the regulatory focus–based account; the promotion-primed participants and the control group were similar in the near-salary condition ($t(115) = 1.12$, $p > .25$), but they differed in the far-from-salary condition ($t(122) = -4.7$, $p < .001$), while the prevention-primed participants and the control group were similar in the far-from-salary condition ($t(121) = -1.11$, $p > .26$), but they differed in the near-salary condition ($t(109) = 3.06$, $p < .001$).

The results of Study 2 provide support for H_1 and H_3. Because the products were exactly the same in terms of price and volume and differed only in their attribute description, the results do not support the liquidity-alone account. Studies 1 and 2 demonstrate the role of regulatory motivations, engendered by temporal distance from last salary receipt, in product preference.

As we mentioned previously, the two brands in each product category differed only on the promotion and prevention dimension. To rule out the liquidity-alone account, we kept the price of the brand pairs identical. However, an alternative account could argue that the brand pairs differed on a necessity/luxury dimension and that being near to (far from) last salary receipt drives preference for luxuries (necessities). To rule out this account, we conducted a test. We randomly assigned 50 participants to one of two groups. We used eight product categories across the four weeks of Study 2. Each product category consisted of a brand pair (Brand A and Brand B), giving us a total of 16 brands. We divided the 16 brands so that the first group of participants saw the description of 8 brands and the second group saw descriptions of the remaining 8 brands. Each group saw only one brand of each product category (i.e., if the first group saw Brand A of car polish, the second group saw Brand B of car polish). The groups were asked to rate the brands on a seven-point bipolar scale. We counterbalanced the scale such that for half the participants, a rating of 1 indicated necessity, and for the other half, it indicated luxury. The results of the test appear in Table 3. The results indicated that each brand pair in a product category was considered in a similar manner along the necessity/luxury scale. That is, each brand pair was considered more of a luxury or more of a necessity; there was no significant difference along this dimension for any of the pairs, which allowed us to rule out the alternative account of necessity/luxury. The findings are in line with prior research that has demonstrated that regulatory motivations are a means to achieve a goal. People can use a promotion or a prevention method to do so. Therefore, two products that are both considered necessities can have different regulatory attributes. For example, toothpaste as a product category is considered a necessity; however, a cavity protection attribute maps onto a prevention focus, while a whitening attribute maps on to a promotion focus.

TABLE 3
Differences Along the Necessity/Luxury Dimension in Study 2

Product	Prevention	Promotion	t-Test [t(50)]
Study lamp (both study lamps cost $9)	Provides light that soothes and protects the eyes (M = 4 69)	Has aesthetic value that enhances the room decor (M = 4 76)	– 15***
Cereals (both cereals cost $4 50)	Has healthful raisin bran (M = 4 11)	Has tasty honey-flavored rolled oats (M = 4)	25***
Mouthwash (both brands of mouthwash cost $5 65)	Provides tartar protection (M = 4 3)	Provides fresh breath (M = 4 03)	69**
Car polish (both car polish cost $7)	Prevents car paint from chipping (M = 4 42)	Gives the car a shining, glossy look (M = 4 69)	– 47***
Hand soap (both hand soaps cost $3 50)	Has antibacterial agents to prevent infection (M = 3 46)	Has shea butter to keep skin soft (M = 4 07)	–1 18*
Laundry detergent (both laundry detergents cost $9 50)	Increases the life of clothes (M = 3 69)	Makes clothes soft and fresh smelling (M = 3 69)	01***
Snacks (both snacks cost $4 50)	Fruit salad (M = 4 61)	Chocolate cake (M = 5 19)	–1 1**
Sunscreen lotion (both sunscreen lotions cost $9)	Protects skin from ultraviolet rays (M = 4 07)	Gives the skin a smooth, glowing look (M = 3 5)	1 02**

*$p > 1$
**$p > 25$
***$p > 5$

General Discussion

Understanding consumer preferences is significant when designing marketing strategies and tactics This article suggests that consumer preferences can change as a function of temporal distance from last salary receipt and demonstrates that changing preferences are due to changing regulatory motivations Consumers in the near-salary condition display behavior consistent with a promotion focus, while consumers in the far-from-salary condition display behavior consistent with a prevention focus We tested the phenomenon and the underlying process across two longitudinal studies

The studies only recruited participants who were employed and received a regular salary To observe the effect in actual purchase behavior, in Study 1, we asked participants to categorize their actual purchases into "aspired" and "ought" categories after every shopping trip The results indicated that participants bought more aspired products in the near-salary condition and more ought products in the far-from-salary condition In addition, the regulatory focus scale recorded the decreasing level of promotion focus as participants moved temporally away from last salary receipt Study 2 primed participants with either a promotion or a prevention motivation It demonstrated how primed motivations can interact with the influence of temporal distance from last salary receipt on product preferences The findings have several implications for managers, researchers, and consumers

Managerial Implications

The knowledge that temporal distance from last salary receipt engenders different motivations can help managers tailor their marketing efforts to initiate promotion-focused activities when consumers are near to their salary receipt and prevention-focused activities when consumers are far from their salary receipt The findings could be used to determine the type of products that could be promoted at different times of the month Prior research on regulatory focus theory has suggested that products that fulfill promotion goals lead to consumer delight by emphasizing promotion emotions of cheerfulness and excitement, while products that fulfill prevention goals increase consumer satisfaction by emphasizing prevention emotions of confidence and security (Chitturi, Raghunathan, and Mahajan 2008) Thus, we would expect consumers who are temporally near to their salary receipt (promotion focus) to be interested in product options that appeal to promotion emotions and consumers who are far from their salary receipt (prevention focus) to be interested in product options that appeal to prevention emotions

Several strategic implications emerge for new product launches When considering a recently launched product, consumers face a purchase decision that is relatively more risky and involves less product knowledge (Rogers 1995) Prior research on regulatory focus theory has suggested that promotion-focused consumers are more likely to own new or very new products (Herzenstein, Posavac, and Brakus 2007) On the basis of our findings, we predict that it would be more effective to launch new products at the beginning of the month, presumably when people are near to receiving their paycheck and are promotion focused, rather than at the end of the month, when people are presumably prevention focused

Companies with loyalty programs award points to consumers who are part of such programs (e g , frequent-flier miles, credit card reward points) These points are similar to monetary gains because they can be used to acquire various products and services Because companies have complete information about consumers' point balance, they can offer products with promotion appeal to consumers who have just received points and products with prevention appeal to consumers for whom significant time has elapsed since receiving points and whose balance might have depleted

Brand switching (Bucklin, Russell, and Srinivasan 1998) and customer retention (Gupta, Lehman, and Stuart 2004, Lewis 2004) have been studied extensively in marketing Different sales promotion methods are employed to achieve two distinct objectives (1) to retain the existing consumers (retention) and (2) to attract consumers who are using some other brand (recruitment or brand switching) Considering that promotion-focused consumers seek more change while prevention-focused consumers prefer avoiding losses, the current findings suggest that companies should focus on recruitment in the near-salary condition and on retaining consumers in the far-from-salary condition

The data also indicate that it might be useful to adjust promotion strategies according to the kind of benefit being offered Products that offer promotion-oriented benefits (whitening toothpaste) might gain more from being advertised to consumers who have just received their salary, while products that offer prevention-oriented benefits (cavity-prevention toothpaste) might be better advertised to consumers for whom time has elapsed since last salary receipt

Theoretical Implications

The findings of this research have several theoretical implications First, unlike many previous studies that have demonstrated the influence of regulatory motivations in a lab setting in which participants were primed with promotion and prevention motivations, we show that contextual factors, such as salary receipt, can engender promotion motivations and influence real consumer purchases Specially, in Study 1, we study people's actual purchases to show the influence of last salary receipt on regulatory motivations Second, the discussion of whether preferences are retrieved or constructed has been ongoing for several years (Simonson 2008) The current research contributes to this discussion by demonstrating that preferences are constructed every salary cycle People change their preferences for products on the basis of contextual cues, such as salary receipt, rather than on the basis of their deeply held preferences Third, economic theories support the idea that current consumption patterns are largely dependent on current earnings and vary with changes in them (Campbell and Mankiw 1991, Carbone and Hey 2004) The findings contribute to this area by demonstrating that not only do earnings influence consumption but they also influence product preferences (even for similarly priced products) Especially in the current economic downturn, there should be a more pronounced effect of last salary receipt on preferences manifested through regulatory motivation because there is less likely to be a financial cushion, making people more dependent on the next paycheck

Consumer Implications

The article has implications for consumer well-being The findings suggest that consumers have more achievement-oriented promotion strategies when they are in the near-salary phase, while they tend to prefer loss-avoiding prevention strategies in the far-from-salary phase Therefore, consumers can devise optimal strategies that can help increase their well-being For example, consumers can experience greater subjective well-being because of regulatory fit by purchasing products with attributes that fit the motivations engendered due to temporal distance from salary receipt Moreover, they can make new plans and try out new options when they are temporally near to their last salary receipt but stick to tried-and-tested options when they are in the far-from-salary phase The findings of this research hold implications for employee welfare Because organizations are aware when their employees are paid, they can design health care plan appeals that reflect either a promotion or a prevention appeal—for example, offering employees services of an exercise consultant (more promotion oriented) when they are near to their salary receipt and a preventive health checkup (more prevention oriented) when they are far from their salary receipt

Limitations and Future Research Directions

In the two studies reported in this article, we manipulated or measured regulatory focus motivations to gather support for a regulatory focus–based explanation of product preferences However, we were not able to manipulate salary receipt because of logistical constraints and thus were confined to measuring it from participants' responses Future studies could try to manipulate the timing and amount of salary participants receive to gather further insight into the process Moreover, we concentrated on product choice and preference in this article Future studies could explore other behaviors affected by temporal changes in salary receipt that are influenced by changes in regulatory motivations Although we measured temporal distance from bill receipts, we did not find any influence on product preferences for the product categories we used Further research should delve into the influence of bill receipt and also the type of bills that could influence preferences It would be worthwhile for studies to explore the influence of other regularly occurring events on people's regulatory motivations Moving away from manipulating motivations in a lab setting would demonstrate the implications and relevance of regulatory motivation to consumers For example, future studies might consider the aspiration-oriented motives that people are likely to hold during the holiday season or the more avoidance-oriented motives people are likely to hold during tax periods

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Raphaëlle Lambert-Pandraud & Gilles Laurent

Why Do Older Consumers Buy Older Brands? The Role of Attachment and Declining Innovativeness

The authors compare three mechanisms that may explain why older consumers tend to prefer older brands Data are from the French perfume market, in which some market leaders are decades old while hundreds of new entrants launch yearly The authors reveal monotonically increasing differences across age ranges Younger consumers have a greater propensity to change their preferred brand, a form of innovativeness that benefits relatively recent entrants, whereas older consumers exhibit a propensity to remain attached for a longer duration to the same preferred brand Nostalgia for options encountered during an early "formative period" has only a limited impact Furthermore, strong heterogeneity emerges At all ages, some consumers frequently change their preferred brand, whereas others remain attached to it for long periods It is the proportion of these two behaviors that varies across age ranges The resultant managerial implications indicate that mature consumers are attractive targets because they likely remain attached to a brand longer, that long-established products may still attract new consumers, and that the success of a new brand among young consumers may be ephemeral

Keywords product choice, older consumers, age, perfume, nostalgia, innovativeness, attachment, heterogeneity

In multiple and important categories, older consumers tend to prefer older brands, and market shares differ greatly across age segments In France, in 1998, 74% of new car buyers 75 years of age and older purchased one of three well-established national brands that had been available for about a century, compared with only 49% of consumers 18–39 years of age, in 2007, radio stations established before the 1981 deregulation had a 58% share among the audience 60 years and older versus a 30% share among those 30 years and younger, and in 2002, perfumes launched before 1962 earned a 37% choice share among 80-year-old consumers but only an 11% share among 29-year-old consumers This trend has high stakes as older consumers come to represent an increasingly significant and growing proportion of many markets For example, "the number of Americans aged 65 and over is expected to increase from 35 million in 2000 to over 70 million by 2030" (Yoon, Cole, and Lee 2009, p 2) In France, the older segment owns 60% of assets (Secodip 2004) and accounts for 45% of cologne and 28% of facial care purchases (Secodip 2006)

It is critical to assess how these preferences for older brands initiate and persist to provide guidance both for older brands that can benefit from the preferences and for new brands that want to overcome them We investigate three possible mechanisms proposed in previous literature to explain such preferences First, according to theory about nostalgia, consumers develop preferences at an early age and maintain them for the rest of their lives (e g , Holbrook and Schindler 1991) Second, an innovativeness explanation asserts that compared with older consumers, younger consumers have a greater propensity to adopt novel products Third, the attachment approach argues that consumers develop affective links over time with objects or brands because of their personal history with and usage of these objects or brands

We compare these three mechanisms through an empirical analysis of the French perfume market Perfume provides an ideal category for studying such phenomena not only because of its size ($2 9 billion [La Ferla 2008], 6% growth in 2006 [Euromonitor International 2008]) and involving nature (Laurent and Kapferer 1985) but also because perfume stores offer a large assortment of the hundreds of new perfumes launched every year (350 worldwide), of which only 20% survive by their third year (Musnik and Prevost 2002) Stores also carry a set of well-established perfumes launched years or even decades ago (e g , Chanel N°5, launched in 1921 and a worldwide mar-

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ket leader ever since) Thus, consumers can choose freely, within the same store, from this diversified offering

In this market, we first confirm that older consumers tend to prefer older brands, and then we discover that younger consumers tend to change their preferences more frequently, which implies innovativeness that benefits relatively recent options but not necessarily those introduced most recently Older consumers are more likely to remain persistently attached to the same option (encountered at any age) Thus, nostalgia has only a limited impact We also observe strong heterogeneity within each age range, such that some consumers change frequently while others remain attached for long periods It is the proportion of these two behaviors in the population that varies across the age ranges

The results have implications well beyond the perfume category All brands should carefully analyze the extent to which their market share varies across age ranges A new brand might enjoy success among younger consumers, but that success might be temporary Consumers can initiate a long-term attachment to a brand at any age, not just in their early "formative" years, and because mature and older consumers tend to remain attached for a longer period, converting them into brand loyalists can be highly profitable Furthermore, we demonstrate that consumers initiate new, long-term attachments with not just recently introduced but also long-established brands Thus, the findings help explain why almost all leading perfumes target with equal vigor all consumers between the ages of 18 and 65 years, namely, to reinforce the attachment of loyal users while encouraging trial by new users

In the remainder of this article, we review existing literature regarding the impact of age on brand choice, as well as research on nostalgia, attachment, and innovativeness, which we use as a basis to formulate our hypotheses After conducting some preliminary qualitative interviews, in Study 1, we use a large sample of female consumers to carry out multiple statistical analyses and confirm that, on average, the older the consumer, the older is the perfume she wears A conditional logit analysis also shows that for predictions about the perfumes a consumer wears, specifications based on attachment and innovativeness perform much better than those based on nostalgia In Study 2, we ask perfumery shoppers about the history of their relationship with their currently preferred perfume We confirm the dominant role of attachment and innovativeness, compared with nostalgia, and we provide additional evidence about consumer heterogeneity across and within different age ranges Finally, we conclude with a discussion and managerial and theoretical implications

Literature Review

Age and Brand Choice

Few empirical studies analyze why older consumers might prefer well-established brands If they consider this preference, they do so as a side note, not as the central focus For example, Furse, Punj, and Stewart (1984, p 421) perform a cluster analysis of search patterns among purchasers of new cars, in which one cluster consists of older buyers "most likely to consider favorably the products of Ford and General Motors" Uncles and Lee (2006) provide examples of well-established Australian brands that are more successful among younger consumer age segments According to Lapersonne, Laurent, and Le Goff (1995), when purchasing a new car, respondents age 60 years and older are more prone to consider only their previous brand than younger respondents Lambert-Pandraud, Laurent, and Lapersonne (2005) also find that older buyers of new cars are more likely to consider and choose long-established national brands, a result that cannot be attributed entirely to the increased tendency of older buyers to repeat purchase, because older consumers are more likely to consider and buy well-established national brands even when they switch from a previous brand These scattered results pertaining to brand choice are consistent with research on nostalgia that shows that older consumers tend to prefer long-known options

Nostalgia

Holbrook and Schindler (1991, p 330) define nostalgia as "a preference toward objects (people, places, or things) that were more common (popular, fashionable, or widely circulated) when one was younger (in early adulthood, in adolescence, in childhood, or even before birth)" They explain that "consumers form enduring aesthetic preferences during a sensitive period" (Holbrook and Schindler 1994, p 414)—specifically, during "late adolescence or early adulthood" (Holbrook and Schindler 1989, p 119) or "late teens and early twenties" (Schindler and Holbrook 1993, p 551)—and they suggest that consumers maintain these early imprinted preferences for the rest of their lives The specific limits of this formative period are somewhat uncertain approximately 23 years of age for pop songs (Holbrook and Schindler 1989), 33 years of age for fashion styles (Schindler and Holbrook 1993), 14 years of age for movies stars (Holbrook and Schindler 1994), 27 years of age for Oscar-winning motion pictures (Holbrook and Schindler 1996), and 26 years of age for automobile styles (scored by men, Schindler and Holbrook 2003)

Research has not tested nostalgic preferences for branded products, despite their major significance for marketers This gap motivates our efforts to assess, among other things, whether similar nostalgic preferences exist for brands that consumers encountered in their youth We summarize the nostalgia approach with the following hypothesis

> H_1 In later periods of their lives, consumers maintain their preferences for options imprinted when they were in their formative period, between the ages of 15 and 30 years

Innovativeness

Innovativeness is the "propensity of consumers to adopt novel products," which is related to novelty seeking, described as "an internal drive or motivating force the individual is activating to seek out novel information" (Hirschman 1980, pp 283–84) Innovativeness should play a role in perfume trial and choice because innovative people are more inclined to take risks (Rogers 2003) and accept changes, such innovativeness has been previously measured as the need for change by Wood and Swait (2002, p 8) (e g , "When I see a new or different brand on the shelf, I often pick it up just to see what it is like")

Botwinick (1978) finds that younger respondents are much more likely to make a choice that could require a change in their daily life situations and to take risks in general, whereas older respondents tend to be more cautious Similarly, Lesser and Kunkle (1991) describe exploratory behavior as a main feature of younger respondents (18–39 years of age) Transposing this finding to consumer behavior and specifically to brand choice, we posit that younger people are more likely to try recent options, which may or may not prove satisfactory, whereas older people prefer to stick to well-known options, even if they are not perfectly satisfying, because their available knowledge eliminates the associated risks

Relevant consumer behavior studies mostly attempt to find a relationship between age and the adoption of new product categories (rather than the adoption of new brands in an existing category) but fail to achieve any consensus, as Rogers (2003, p 288) acknowledges when he notes that "there is inconsistent evidence about the relationship of age and innovativeness About half of the many diffusion studies on this subject show no relationship, a few found that earlier adopters are younger, and some indicate that they are older" These variations may be due to differences in the products under study Similarly, Hauser, Tellis, and Griffin (2006, p 689) conclude that "while some studies have shown that innovators are better educated, wealthier, more mobile, and younger, other studies have failed to validate these findings " Still other studies identify a negative relationship between age and innovativeness For example, Tellis, Yin, and Bell (2009, p 12) claim that innovativeness measured by "reluctance is best explained by age and income, closely followed by mobility, education, and gender"

These conflicting results require us to assess the hypothesis carefully against empirical evidence We propose that younger consumers' proneness to exploration, variety, and change stimulates their choice of recent options, whereas older consumers should prefer to stay with options they know rather than trying new ones (Botwinick 1978)

> H_2 Compared with older consumers, younger consumers exhibit a greater preference for recently introduced options

Attachment

Consumers might remain attached to a perfume, just as they are attached to material possessions Although the concept of attachment originally pertained to the bond between an infant and a parent (Bowlby 1979), it also can apply to people of all ages in consumption situations Kleine and Baker (2004, p 4) define material possession attachment as "a multi-faceted property of the relationship between an individual and a specific material object" Attachments form with a specific material object, involve psychologically appropriated possessions, are self-extensions, require a personal history between the consumer and the possession, tend to be emotionally complex, and evolve over time with the changing meaning of the self In this sense, perfume may become psychologically appropriated ("my perfume"), often over long periods, it represents an intimate self-extension the consumer projects onto her immediate social environment, and it involves a highly personal choice that indicates a strong manifestation of a consumer's personality A consumer also might develop a personal history with her perfume through daily applications and associate it with memorable, emotional moments (Mugge, Schifferstein, and Schoormans 2006) Furthermore, a person's attachment to a perfume can achieve emotional complexity in terms of both olfactory sensations and associated affective memories

From this list, only the characterization of perfume as a specific material object may seem arguable because a perfume bottle must be replaced when empty However, a perfume also may reflect a unique possession, in that through repurchase, the same liquid, bottle, and name reappear in their original state, like a phoenix Perfume as part of a person's extended self exemplifies Belk's (1988) memorable formulas Consumers consider a perfume part of themselves and use it to connect with memories of the past Attachment then grows as they accumulate memories affiliated with the perfume

However, the question of how such attachment begins remains unanswered because no longitudinal studies of material possession attachment exist, even though Ball and Tasaki (1992, p 156) specifically find that attachment evolves "over time, according to self-meaning" from childhood to older ages Most authors suggest monotonic growth of attachment over time, based on the consumer's interactions with the possession Ball and Tasaki stress that greater attachment is related to longer ownership and increased emotional significance In their sample, among respondents older than the age of 24, attachment increased regularly from preacquisition to early ownership to mature ownership and declined only if the owner considered getting rid of the object or abruptly ended the attachment by discarding it Kleine and Baker (2004) also find that attachments to objects mirror those to other people, such that continuous activities undertaken with the object imbue the object with greater meaning Thomson, MacInnis, and Park (2005) find that strong attachments require time, repeated interactions, and memories pertaining specifically to the object, which encourage the person to invest the object with greater meaning Price, Arnould, and Curasi (2000, p 188), analyzing the "cherished possessions" of respondents 65 years of age and older, cite a telling verbatim "It's almost like a history of our life " We formalize this discussion as follows

> H_3 Compared with younger consumers, older consumers are likely to remain attached for longer periods to the product they use

We also note a key difference between nostalgia and attachment With nostalgia, a consumer maintains preferences "imprinted" during her formative period but does not develop new preferences later In contrast, the attachment approach suggests that a consumer can initiate an emotional attachment at any age, even after the formative period is over

Nostalgia, Innovativeness, and Attachment: Commonalities

H_1 (nostalgia), H_2 (declining innovativeness), and H_3 (attachment) all suggest the following hypothesis

> H_4 The older a consumer, the greater are her preferences for long-established options

If older consumers tend to prefer older options and younger consumers prefer more recent options, older options should appeal to the same (older) consumers, and recent options should appeal to the same (younger) consumers More generally

> H_5 Options launched at about the same time tend to be used by the same consumers

Although H_1, H_2, and H_3 all lead to H_4 and H_5, they also make different predictions about the specific functional relationship between consumer age and option choice Therefore, in Study 1, after uncovering empirical support for the common hypotheses, H_4 and H_5, we assess the respective predictive power of econometric specifications based on H_1, H_2, and H_3 In Study 2, after confirming support for H_4, we acquire the history of each respondent's relationship to her currently preferred perfume to test H_1, H_2, and H_3

Interviews with Perfumery Salespeople

To understand the age differences associated with perfume purchasing, we asked eight salespeople to describe them These informants work in shops representing a leading specialized perfume retailer in France[1] According to these expert salespeople, a buyer younger than 30 years typically does not know in advance what she will buy, may test as many as ten different perfumes, and ends up buying a rather new perfume (e g , Kenzo Flowers, Lolita Lempicka, Dior Chérie) One sales assistant explained that she must restrain young consumers from excessive testing because, after four tests, they simply get confused by the various scents These indications match Tissier's (1982, p 203) conclusion that "teenagers' behavior is not yet stabilized They are looking for a personality, and also for a store, a brand, a product that will fit this changing personality"

In contrast, according to the salespeople, an older customer (70 years of age or older) typically knows in advance what perfume she will buy her usual one, which is a traditional and famous perfume produced by a long-established luxury house (e g , Chanel N°5, L'Air du Temps by Nina Ricci) She keeps buying it because she "adores it" "as a souvenir of beloved ones" She "knows it very well," "has been wearing it for a long time," and "is very loyal to it" This traditional and famous perfume is not necessarily among the oldest available, she may test a new perfume from a great name, "by curiosity, for example Allure Sensuelle of Chanel" If her perfume happens to be unavailable, the older customer typically postpones her purchase, the store will order it, and she will come back later to pick it up In contrast, a young customer typically buys another perfume "She's not stubborn, she's open to all suggestions" These salespeople also made a clear distinction between mature consumers (ages 50–65) and older ones (age 70 and older) "For me, old starts at 70" Mature consumers "don't have at all the same buying behavior" but rather are "very active, they're going to indulge in last minute purchases, they get their information from magazines, they come and see new products as much as other age categories do"

According to these vignettes, young consumers seek novelty—new scents, new perfume names, new trends Older consumers are attached to their perfume, which conveys a shared intimacy and memories In the middle, mature buyers keep themselves informed, are experts, and are interested in testing and buying new products

Study 1

Study 1 has two main goals The first is to confirm that older consumers prefer older brands (through four successive statistical analyses), and the second is to evaluate the relative ability of nostalgia, innovativeness, and attachment to predict brand choice (by comparing different econometric specifications of a conditional logit model)

Data Set

We analyze data from a large-scale mail survey conducted in France in 2002 by the market research company Acxiom Respondents reported their purchases in various product categories, as well as their demographics Because the perfumes men and women use are very different and because female users are far more numerous, we only study women Among the 149,918 female respondents, ranging in age from 19 to 103 years, 130,411 reported using perfume and indicated which perfumes they use The sample is large, with an average of 3086 respondents per birth year (though this declines for elderly respondents, of which there are only 4 respondents who are 103 years of age) Accordingly, the figures display results only up to age 85 years To indicate the perfumes they wear, respondents checked the appropriate boxes among 63 possible answers 39 specific perfumes (e g , "Poison by Dior") and 24 sets of alternatives produced by the same brands (e g , "Another perfume by Dior") Because our focus is on launch dates, we consider only the 4 sets (among the 24 sets) that combine perfumes launched at about the same time (within two years) Respondents could check a single box or multiple boxes (or no box if they do not wear perfume, which eliminates them from further analysis)

The percentage of female respondents using perfume increases slightly from 90% to 91% between the ages of 19 to 21, remains roughly constant at approximately 88% from 22 to 47 years of age, and then decreases monotonically to 84% around age 60 years and 70% around age 80 years The exact percentage continues to diminish after age 80, but the smaller sample sizes make it difficult to evaluate these percentages precisely Perfume penetration varies to a lesser extent with other demographics In addition, among perfume users, the average number of perfumes used per person tends to decrease with age The mean number of perfumes is 3 08 at age 20, 2 93 at age 40, 2 63 at age 60, and 2 05 at age 80 Again, other demographics have a weaker effect

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[1] In France, specialized perfume shops represent 81% of retail sales, compared with 12 5% for mass retailers and 6 4% for direct sales

We perform a series of analyses (which we detail in Appendix A) A factor analysis reveals that perfumes launched at about the same time tend to be used by the same consumers (H_5) In three successive analyses, we also confirm that compared with other demographics, consumer age is by far the strongest predictor of perfume choice (H_4)

Perfumes Launched at About the Same Time Tend to Be Used by the Same Consumers.

To test H_5, we analyze the patterns of joint perfume usage to determine whether, for each pair of perfumes, a correlation (positive or negative) exists in their usage That is, we search for an overall pattern across the 903 correlations among 43 perfumes (39 specific perfumes and 4 sets of perfumes launched by a same manufacturer at about the same time)

In this analysis, we do not assign a priori any role to perfume age Therefore, for each perfume, we only consider a binary variable whether a consumer uses it (1) or not (0) To measure the association between two such binary variables, a tetrachoric correlation (Pearson 1900, Uebersax 2006) assumes that each binary variable results from an underlying latent continuous trait with a Gaussian distribution and estimates the correlation between the two underlying traits To identify the overall pattern underlying the joint choices among the 43 perfumes, we follow Edwards and Allenby (2003) and perform a factor analysis of the 43 × 43 matrix of tetrachoric correlations, using a Varimax rotation A scree test leads us to retain the first two factors (λ_1 = 7 33, λ_2 = 5 98), which together explain 31 0% of the variance The first factor is highly correlated (r = – 655, Spearman) with the average age of the perfumes used by respondents, the main structural factor that emerges spontaneously from our analysis The second factor is related (r = – 508, Spearman) to the number of perfumes each respondent uses To illustrate the interpretation of the first factor, we allocate the 43 perfumes into three groups on the sole basis of the correlation between each perfume and the first factor score, as we show in Table 1

The 15 perfumes with highly positive (HP) correlations (21– 85) launched between 1992 and 2001 (average introduction date 1996) The 18 perfumes with weak (Null) correlations (– 28 to 20) were introduced between 1953 and 2000 (average 1987) The 10 perfumes with highly negative (HN) correlations (– 30 or less, to – 78) appeared between 1921 and 1996 (average 1957) A nonparametric test confirms that the distribution of introduction dates differs across the three groups (Kruskal-Wallis, χ^2 = 17 6, d f = 2, $p <$ 001)

Thus, on the sole basis of joint usage, considering perfumes similar if they are used by the same consumers, we demonstrate that perfume age provides an appropriate framework for structuring the perfume market Perfumes launched at approximately the same time tend to appeal to the same consumers, such that consumers with high positive scores on the first factor tend to use recently introduced perfumes and those with high negative scores tend to use long-established perfumes This analysis offers support for H_5

TABLE 1
Perfume and Factor Score Correlation Categories

Group (Correlation with First Factor)	Launch Dates for Perfumes in the Group	Average Launch Date[a]
HP (85 to 21)	2001, 1999, 1998, 1998, 1997, 1997, 1996, 1996, 1996, 1996, 1995, 1994, 1994, 1992, 1992	1996
Null (20 to – 28)	2000, 1998, 1996, 1996, 1996, 1995, 1995, 1995, 1994, 1992, 1991, 1990, 1987, 1985, 1978, 1972, 1969, 1953	1987
HN (– 30 to – 78)	1996, 1988, 1984, 1984, 1983, 1977, 1970, 1948, 1925, 1921	1957

[a]Weighted by frequency of perfume usage

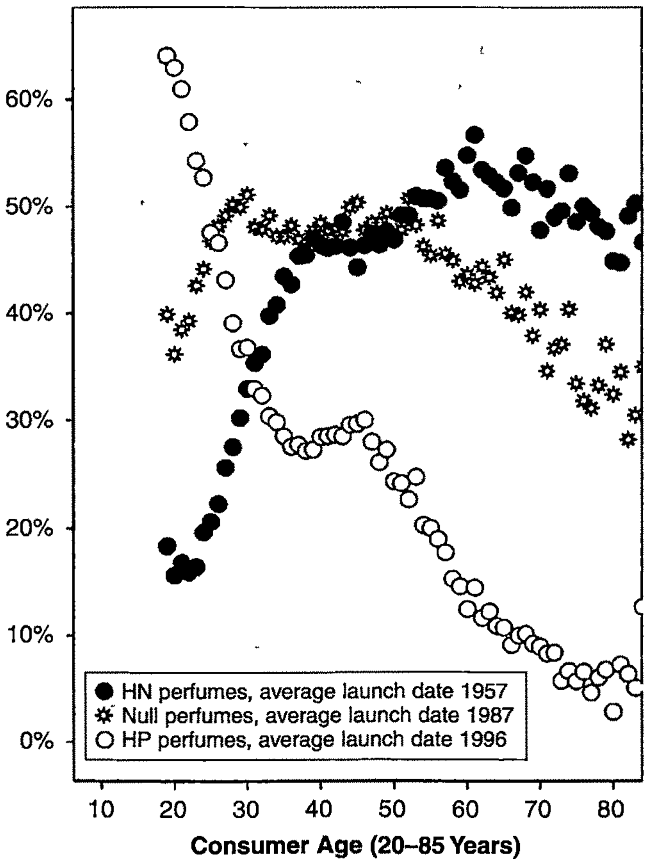
Older Consumers Tend to Prefer Older Perfumes

To determine which consumers earn positive or negative scores on this first factor, we perform a series of analyses of variance Consumer age is by far the best predictor (R^2 = 093) of each consumer's score on the first factor, whereas other demographics (e g , region in which she lives, number of credit cards, marital status, occupation) have weak impacts ($R^2 <$ 01 for each) The correlation between the age of each consumer and her factor score is strongly negative (r = – 34, $p <$ 0001, Spearman), whereas consumer age is not correlated with the second factor (r = – 003, not significant [n s]) That is, respondents with high positive scores are younger and tend to use more recent perfumes, whereas respondents with high negative scores are older and tend to use longer-established perfumes, in support of H_4 Additional support comes from the simple correlation between consumer age and the average age of the perfumes she uses (r = 38, $p <$ 0001)

Which groups of perfumes are used? The average age of the perfumes a consumer uses actually may be misleading because, for example, an average of 14 years could result from the joint usage of two perfumes introduced 5 years ago and 23 years ago To test H_4 further, we analyze three separate dependent binary variables that indicate whether a consumer uses at least one of the HP perfumes, at least one of the Null perfumes, and at least one of the HN perfumes A multivariate probit analysis indicates that consumer age has an extremely significant, positive impact (β = 018, t = 77 20) on the likelihood of choosing an HN perfume, an extremely significant, negative impact (β = – 028, t = –100 94) on the likelihood of choosing an HP perfume, and virtually no impact (β = – 002, t = –8 59, which is relatively small, given the sample size) on the likelihood of purchasing a Null perfume This finding again supports H_4 The older a consumer, the greater are her preferences for long-established options Figure 1 illustrates the penetration of each group of perfumes as a function of consumer age

How many perfumes from each group? However, this multivariate probit analysis suffers two drawbacks First, for each group of perfumes, it considers only whether the consumer uses it, the rich data actually indicate how many perfumes each consumer uses in each group Second, the binary variables result from two distinct causes, that is, depending on their age, consumers exhibit different preferences among the three groups, and they do not use the same number of perfumes (e g , usage in all three groups diminishes for consumers older than 60 years of age, see Figure 1) Again, we are not interested in the total number of perfumes used but rather in consumer preferences among perfumes Therefore, we analyze how each consumer allocates her choices among the three groups (e g , four different perfumes may be allocated 2/2/0, 4/0/0, or 0/1/3), using a series of multinomial models (Appendix A) In estimations with homogeneous models, we first confirm that consumer age has a much greater explanatory power than any other consumer characteristic (χ^2 = 22,887, d f = 2, which is more than 25 times greater than the chi-square values obtained with other demographics) Taking consumer heterogeneity into account with three latent classes, we reach similar results with different coefficients in each class The older the consumer, the higher is her probability of choosing an HN perfume, and the lower is her probability of choosing an HP perfume Overall then, three successive analyses support H_4 The older a consumer, the greater are her preferences for long-established options—but through which mechanism?

FIGURE 1
Penetration of the Three Groups of Perfumes as a Function of Consumer Age (Study 1)



Nostalgia, Declining Innovativeness, or Attachment?

To compare these mechanisms, we analyze consumer choice at the level of individual perfumes to determine how well nostalgia, innovativeness, or attachment predicts which leading perfumes a consumer will use The 13 leading perfumes (used by at least 5% of respondents) were launched over a variety of dates, from the 1920s to the early 2000s, and represent a good balance among the three groups we define (5 HN, 4 Null, and 4 HP) We consider 1,695,343 observations, or 13 indicator variables for all 130,411 respondents

Our conditional logit analysis shows that the econometric specification based on the attachment hypothesis (H_3) achieves the greatest explanatory power, beyond that obtained by a specification based on the hypothesis of declining innovativeness (H_2) and well above that obtained with a specification based on the nostalgia hypothesis (H_1) We use conditional logit analysis because the explanatory variables are not fixed characteristics of the respondent or the perfume but rather are conditional and result from an "interaction between option characteristics and individual characteristics" (Allison 2006, p 165)—in this study, the consumer's birth date and the perfume's introduction date For example, nostalgic preference for a specific perfume depends on whether the perfume was introduced during the respondent's early formative period—in general, between the ages of 15 and 25 years—so this variable changes across respondents for a given perfume and across perfumes for a given respondent In contrast, in generalized logit models, "the choice is a function of the characteristics of the individual making the choice" (So and Kuhfeld 2008, p 168) The conditional logit model extends "to studies in which people choose two or more options from among their option sets" (Allison 2006, p 174, see also Le 1998, So and Kuhfeld 2008)

Each mechanism—nostalgia, innovativeness, and attachment—leads to a different specification of the impact of consumer age and perfume age on perfume choice We compare the results obtained from using each of these specifications separately, with two specifications together, or with all three specifications[2] The full conditional logit model includes all three specifications, as follows

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[2] We present a single parameterization for each mechanism As we discuss subsequently, in the absence of previous formal models, we apply systematic variations of these parametric representations and retain the one that fits the best

$$(1) \qquad U_{iq} = \sum_{r=1}^{Q} \alpha_r D_{rq} + \beta_1 N_{iq} + \beta_2 A_{iq} + \beta_3 I_{iq} + \varepsilon_{iq},$$

where U_{iq} refers to the utility of perfume q for consumer i, ε_{iq} is a random error, D_{rq} is a dummy variable that takes the value of 1 if r = q and 0 if $r \neq q$, N_{iq} denotes the nostalgia-based functional form for consumer i and perfume q, A_{iq} is the attachment-based functional form for consumer i and perfume q, I_{iq} reflects the innovativeness-based functional form for consumer i and perfume q, Q is the number of perfumes under investigation, and α_r (r = 1, Q), β_1, β_2, and β_3 are the parameters to be estimated.

In H_1, we posit that in later periods of their lives, consumers feel nostalgia for perfumes that they imprinted when they were in their early, formative period. Therefore, N_{iq} takes a maximal value of 1 if consumer i was 15–25 years of age when perfume q launched in France, a value of 0 if the consumer was younger than 10 years of age or older than 30, and an intermediate (linearly interpolated) value if the consumer was 10–15 or 25–30 years of age. Note that we follow closely the presumptive definition of nostalgia that Holbrook and Schindler (1989, 1994) offer as a preference for options introduced during the formative period. An alternate definition could consider nostalgia for options available during a person's formative period, even if they had been introduced much earlier. We also test this alternative definition and report the results subsequently.

According to the innovativeness hypothesis (H_2), compared with older consumers, younger consumers should exhibit greater preference for recently introduced perfumes, such that I_{iq} takes a value of 0 if perfume q is not recent (launched more than 10 years before the survey). If q is recent, I_{iq} takes a maximal value of 1 if consumer i is currently 30 years of age or younger and an exponentially declining value between 1 and 0, as a function of consumer age, if the consumer is older than 30 years of age (i.e., the exponential decline has a slope of approximately negative 6% per year,[3] and I_{iq} reaches .05 at age 80).

According to H_3, compared with younger consumers, older consumers are likely to remain attached for longer periods to the options they use. Because the data provide no direct measure of the duration of each respondent's usage of a perfume (see Study 2), we use as a proxy the duration of the consumer's potential exposure to the perfume since it was introduced. Exposure might result from personal usage of the perfume, but it also can take alternative forms, such as testing the product in a perfume shop, sampling, smelling the perfume on a friend, seeing the product in advertising, or reading about it in editorial content. In the absence of previous statistical models of attachment, we adopt a simple specification in which we hypothesize that the degree of attachment is directly proportional to the length of potential exposure. In the exponential form of the logit model, we define A_{iq} as the logarithm of the number of years, which produces better results than setting it equal to the actual number of years.

In Appendix A, we present the estimations of eight conditional logit models. Here, we offer conclusions based on the results of the full model (Equation 1). Attachment (β_3 = 1.327, χ^2 = 6165, d.f. = 1) and, to a lesser degree, innovativeness (β_2 = 1.066, χ^2 = 1390, d.f. = 1) have the strongest predictive power. Although the chi-square for nostalgia (17, d.f. = 1) is highly significant, it is much smaller than those related to the two other variables and very small for the large sample size; furthermore, the sign does not match our expectations.[4]

To illustrate the hierarchy among A_{iq}, I_{iq}, and N_{iq}, we depict in Figure 2 the predictions from Equation 1 using a single predictor (nostalgia, innovativeness, or attachment) for three perfumes launched at different dates (A, F, and L). For each perfume, we display the observed and predicted choice shares as a function of consumer age. To compute the predicted share of choices, we use So and Kuhfeld's (2008) method. Specifically, we calculate each consumer's estimated choice probability for perfume j. For each consumer age, we then compute the predicted choice share of perfume j by averaging this probability across all consumers of that age. Attachment performs best in terms of fitting the qualitative characteristics of the three perfumes and correctly predicts a monotonic increase with age for perfume A (launched in the 1920s), a monotonic decrease for L (late 1990s), and an inverted V shape (an increase followed by a decrease) for F (late 1970s). Innovativeness provides a good fit for L (the recent perfume) but not for A and F. Nostalgia misses the key qualitative features for all three perfumes. This qualitative assessment confirms the results of the likelihood ratio tests. We also reach similar conclusions (not reported here for brevity) when we examine predictions for the ten other most popular perfumes.

In Figure 3, we display the observed choice shares and the shares predicted by the full model (Equation 1) for most of the leading perfumes (others were omitted for space considerations). The overall patterns of variation fit well, and we reproduce a monotonic increase in share with age for the older perfumes A, B, and C, an inverted V shape for the middle-aged perfumes D, E, I, and J, and a monotonic decline for the recent perfumes L and M.

Study 1 uncovers strong support for H_3 (attachment), strong support for H_2 (innovativeness), and marginal support for H_1 (nostalgia). However, Study 1 suffers from a

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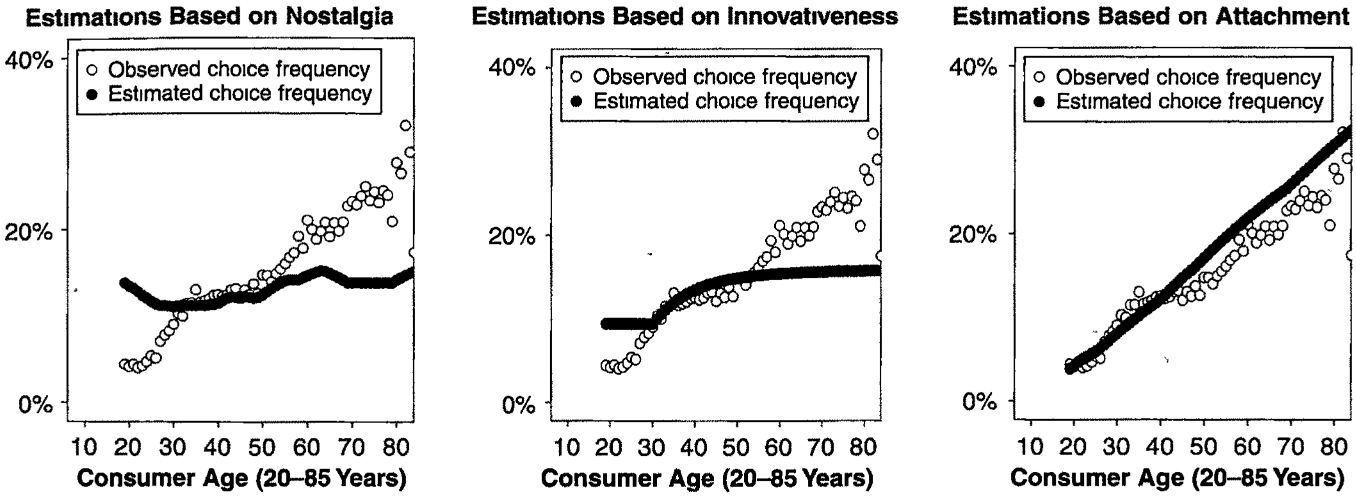
[3] We use this rate of exponential decline because it produces better results than rates that lead to values of .15 or .50 at age 80.

[4] We also test an alternative operational definition of nostalgia, in which consumers feel nostalgia not just for options introduced when they were in their early formative period but also for options available at that time, even if they had been introduced earlier. When we use nostalgia as the unique mechanism in Equation 1, we obtain slightly worse results than those produced by our definition (likelihood ratio [LR] = 21,598 versus 21,644, coefficient of 1.07 versus .73). In the full model, the overall results are marginally better (LR = 36,051 versus 35,831) and produce exactly the same conclusions with regard to the relative explanatory power of attachment (χ^2 = 5367, d.f. = 1), innovativeness (χ^2 = 1161), and nostalgia (χ^2 = 237), which again reveals a negative coefficient.

FIGURE 2
Observed Choice Frequency and Frequencies Estimated on the Basis of Nostalgia, Innovativeness, or Attachment (Study 1)

A: Perfume A (1921)

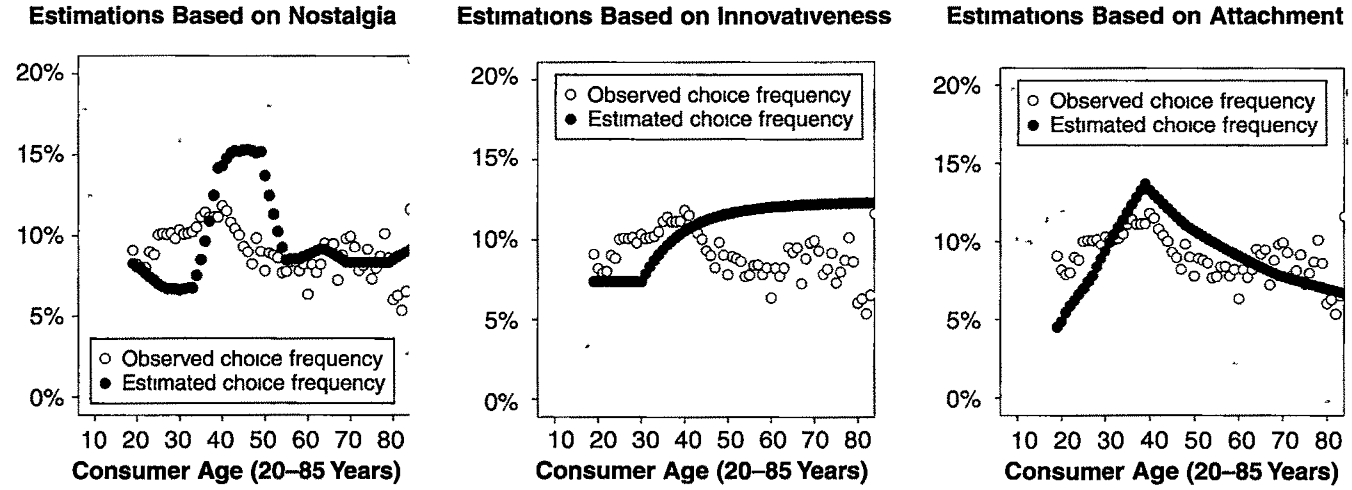


Estimations Based on Nostalgia

Estimations Based on Innovativeness

Estimations Based on Attachment

B: Perfume F (1978)

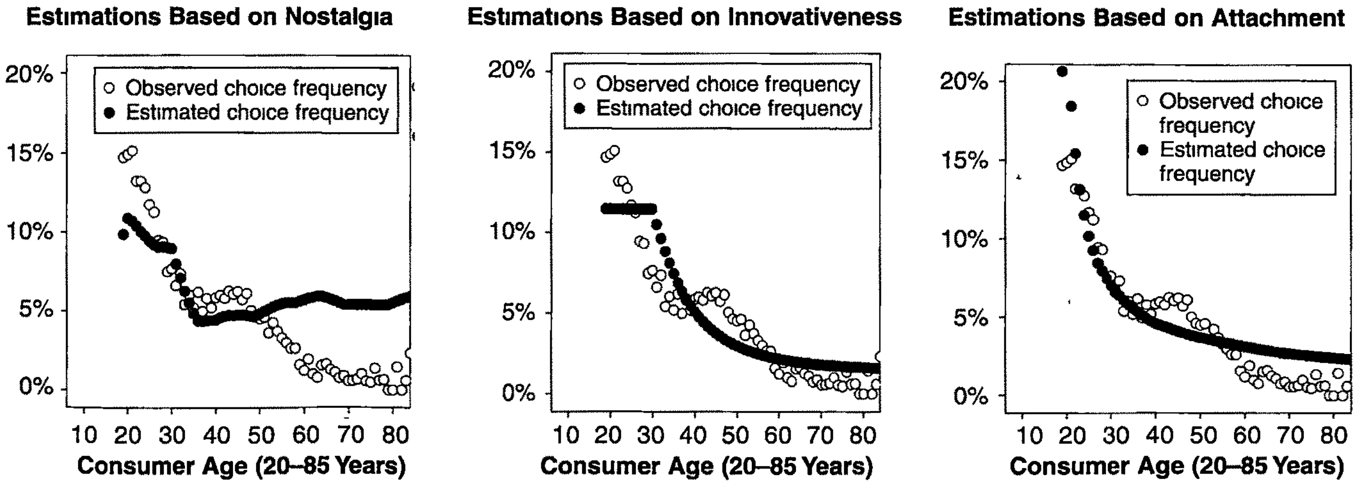


Estimations Based on Nostalgia

Estimations Based on Innovativeness

Estimations Based on Attachment

C: Perfume L (1997)

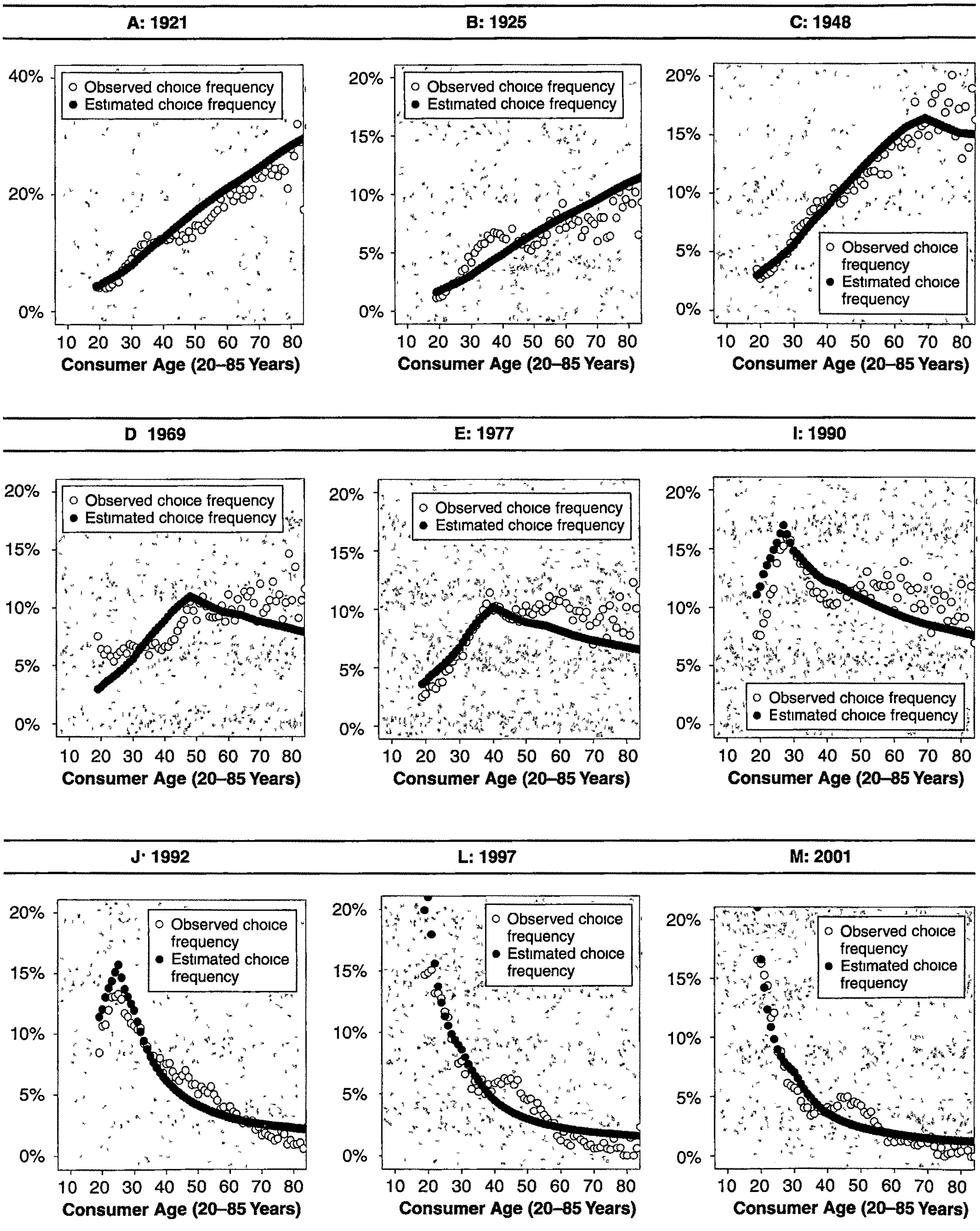


Estimations Based on Nostalgia

Estimations Based on Innovativeness

Estimations Based on Attachment

FIGURE 3
Observed Choice Frequency and Frequencies Estimated on the Basis of the Full Conditional Logit Model (Study 1)



A: 1921 B: 1925 C: 1948

D 1969 E: 1977 I: 1990

J· 1992 L: 1997 M: 2001

strong limitation It relies only on information about consumers' current perfume usage, and it infers past behavior from that information This limitation motivates Study 2, in which we collect data about each consumer's history of behavior and attitudes toward perfumes directly

Study 2

Method

We survey 260 female perfume consumers between the ages of 15 and 87 years (M_{age} = 44 years) who shopped in Nocibe perfume shops[5] After they paid the cashier, we asked the customers to participate in a three-minute interview

Literature on retrospective reports suggests that older people have difficulty answering questions about remote behaviors, so they should have the benefit of a supportive context whenever possible (according to Craik, cited in Schwartz et al 1999) Therefore, we first anchor respondents' accessible memories with a simple question about their current behavior (which perfumes they currently wear and, of those, the perfume they wear most often), then, we asked a single retrospective question about the latter (when they first used it) Only three respondents (1%) could not report the name of their currently preferred perfume In addition, following Craik (in Schwartz et al 1999, p 109), we rely on "verifiable public events" That is, we identify the actual introduction date of each perfume mentioned and check its consistency with each respondent's answer Errors were rare, only three respondents (1%) indicated that they began using a perfume before it was actually launched (in the worst case, the respondent indicated that she had been using a perfume for 25 years when it actually launched 19 years previous to the interview, indicating a 6-year error)

Next, respondents provided agree/disagree answers to items pertaining to innovativeness (e g , "I love trying new perfumes"), attachment (e g , "I prefer perfumes I have known for a long time"), nostalgia (e g , "I remain loyal to the first perfumes I wore"), and longing for the past (e g , "I'd like to go back a few years") We derive the items in these four scales from previous literature (for nostalgia and longing for the past, see Holbrook and Schindler 1994, for attachment, see Kleine and Baker 2004, for innovativeness, see Ailawadi, Neslin, and Gedenk 2001, for all items, see Bearden and Netemeyer 1999), we also test them using two pretests The distinct measures separate the concepts that Holbrook and Schindler discuss, namely, nostalgia and longing for the past A factor analysis with Varimax rotation confirms the four orthogonal factors corresponding to nostalgia, innovativeness, attachment, and longing for the past, which we use in the subsequent analyses

The questions regarding the first perfume respondents ever wore included their age when they began wearing it, the name of the perfume, whether they still use it, and whether it is still available on the market We expected respondents to have more problems answering the questions about their first perfume than questions about their currently preferred perfume, so we checked the consistency between the respondent's answers about her first perfume and the perfume's actual introduction date In addition to the 14% of respondents who did not remember the name of their first perfume, 15% mentioned a perfume that had not yet been launched when they began using perfume (in the worst case, the perfume launched 49 years later), and 8% remembered only the name of the perfume manufacturer, not the specific perfume Given these errors, we rely on simple analyses of several other items The questionnaire concluded with some demographic items

Results

The results provide additional support for H_4 Older consumers tend to use older perfumes The correlation between consumer age and age of the preferred perfume is r = 44 ($p <$ 0001) In Study 1, the correlation between consumer age and the average age of the perfumes used was r = 38

Nostalgia According to H_1, in later periods of their lives, consumers maintain their preferences for options imprinted when they were in their formative years Only a small minority of respondents indicate that they still prefer their first perfume (7 3% still wear their first perfume "very often," 12 3% do so "from time to time") In addition, 14% agree that "I never changed my perfume," and 15% concur that "I am still using the perfume of my first parties" Investigating nostalgia only in relation to the first perfume may be too narrow, we find greater agreement (26%) with a less restrictive statement "I stay loyal to my first perfumes"

To adopt a broader interpretation, we analyze whether respondents first used their currently preferred perfume when they were 30 years of age or younger, 44% did so This number results largely from a methodological bias because the figure must be 100% for those respondents younger than 30 years of age, and it drops markedly with age (i e , 32% for respondents 31–49 years of age, 13% for respondents 50–64 years of age, and 19% for respondents 65 years of age and older)

Overall, only a minority of consumers older than 30 years of age have nostalgic perfume preferences for perfumes they encountered before they were 30 Therefore, nostalgia does not offer a main explanation of older consumers' observed tendency to use older perfumes

Innovativeness According to H_2, compared with older consumers, younger consumers should exhibit a greater preference for recently introduced options The innovativeness factor score correlates negatively with consumer age (r = – 19, $p <$ 01) This finding implies a propensity to change preferred perfumes frequently, as well as a propensity, when changing, to adopt a recently introduced perfume

In Figure 4, Panel A, we plot the duration of respondents' relationships with their currently preferred perfumes

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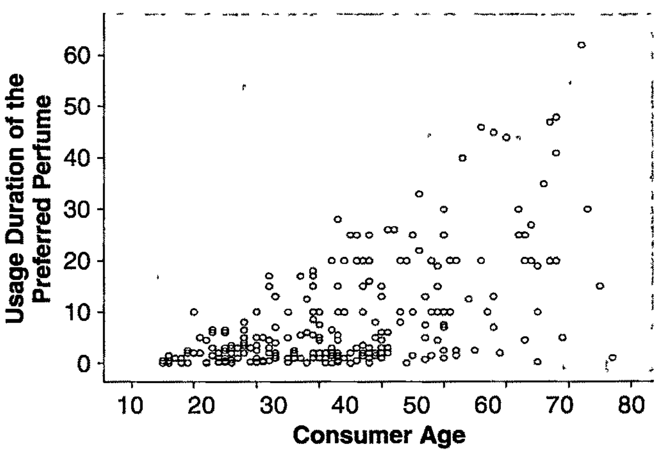
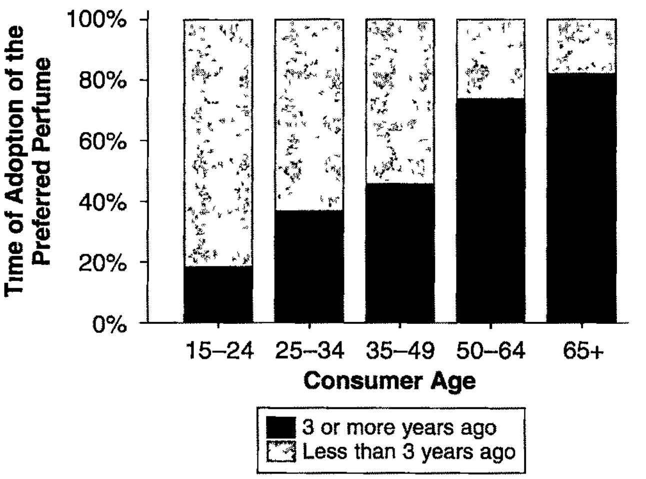
[5] Nocibe is one of the three leading perfume chains in France We ran interviews during three mornings and eight afternoons in four different stores located in Paris or its suburbs, which Nocibe recommended as representative in terms of the age and income diversity of its customers The interviewers followed quota guidelines to replicate the age structure of Nocibe's clientele, or 33% under 35 years of age, 33% at 36–49 years of age, and 34% age 50 and older (12% are age 65 and older)

FIGURE 4
Impact of a Consumer's Age on How Long She Has Used Her Preferred Perfume (Study 2)

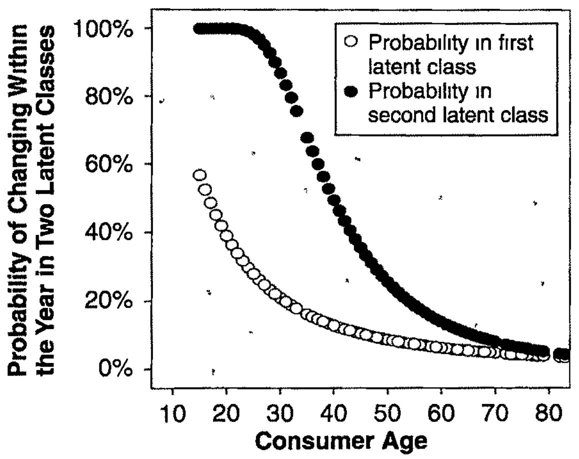
A: Older Consumers Remain Attached Longer to Their Preferred Perfume



B: The Younger the Consumer, the More Recently She Adopted Her Preferred Perfume



C: In Both Latent Classes, Older Consumers Have a Lower Probability of Changing Their Preferred Perfume Within One Year



(ordinate) against their ages (abscissa). The strong average trend reveals a correlation between age and duration of .58 ($p < .0001$), due in part to a ceiling effect. That is, the duration cannot be longer than the time elapsed since the respondent first began wearing perfume. To escape this effect, we consider a simple operational indicator of innovative behavior: whether the consumer had adopted her preferred perfume less than three years ago. No less than 41% of respondents did so overall. Figure 4, Panel B, provides strong support for H_2, in that this percentage decreases across age groups (from 75% in the 15–24 age group to 13% among those 65 years of age and older, $\chi^2 = 37.7$, d.f. = 4, $p < .0001$).

Another feature of innovativeness is a propensity to adopt a recently introduced perfume. For each respondent, we compute the age of her preferred perfume when she adopted it. On average, preferred perfumes had been in the market for 6.0 years when respondents currently 30 years of age or younger adopted them, for 15.8 years when respondents currently 31–49 years of age adopted them, and for 20.7 years when respondents currently age 50 years and older adopted them. Thus, compared with older consumers, younger respondents tend to adopt perfumes that have been introduced more recently ($F = 8.306$, $p < .0001$).

These two aspects of innovativeness are linked because consumers who change their preferred perfume often also tend to choose more recent perfumes. Specifically, among respondents who adopted their preferred perfume within the previous three years, that perfume was, on average, 8.9 years old. If, instead, they adopted their preferred perfume three years or more ago, the perfume was, on average, 19.1 years old. The difference between these two groups also is significant (Wilcoxon $t = -3.22$, $p < .001$, one-sided).

Attachment. According to H_3, compared with younger consumers, older consumers should remain attached to the options they use for a longer duration. The results support this claim, in that the average duration of use is 2.4 years among consumers 30 years of age or younger, 6.8 years for those 31–49 years of age, 12.0 for those 50–64 years of age, and 23.0 years among those 65 years of age or older. These findings reflect, in part, the higher proportion, among young respondents, of consumers who adopted their preferred perfume less than three years ago, but even when we exclude them from the analysis, the duration-of-use figures remain notable (respectively, 5.2, 11.4, 14.7, and 26.2 years). The positive correlation ($r = .208$, $p < .0001$) between the factor score of attachment and the duration since the respondent first began using the current preferred perfume offers further confirmation of the hypothesis.

Modeling heterogeneity from innovativeness to attachment. The data in Figure 4, Panel A, support both H_2 and H_3, but they also suggest strong heterogeneity. For any consumer age, the duration-of-use values scatter between a minimum of 0 and a maximum equal to a relationship that began when the respondent was 15 or 20 years of age. Thus, we find consumers who behave innovatively and consumers who have remained attached to one perfume their entire lives. In turn, we describe the durations of consumers' relationships with their preferred perfumes through a heterogeneous stochastic model

Specifically, we model a consumer's relationship with her preferred perfume as a renewal process At any time, the respondent has a preferred perfume, which remains the same until the next renewal occasion, that is, until she switches to another perfume For each consumer n, we describe the stochastic duration of the relationship with an exponential distribution with parameter λ_n A simple interpretation is that the probability of the respondent changing her preferred perfume within the next year is equal to $1 - \exp(-\lambda_n)$

Appendix B describes the different models we investigated As we expected, a simple homogeneous model (same λ_n for all consumers) does not fit the data well The best fit comes from a heterogeneous model with two latent classes (probability of belonging to the first class is the same for all respondents, but in each class, λ_n is a linear function of the consumer's age with different coefficients) This model summarizes the conclusions from Study 2 The probability that a consumer will change her preferred perfume within the next year decreases significantly with age Additional heterogeneity exists across consumers of the same age At any age, compared with members of the first class, consumers of the second class have a much higher probability of changing their preferred perfume To illustrate these findings, in Figure 4, Panel C, we plot for both classes the expected probability that a consumer will change her preferred perfume within one year against her age Using this model, we can estimate how often, over a consumer's lifetime (from 20 to 80 years of age), she is likely to change her preferred perfume The results differ markedly between the two latent classes, reaching values of 8 times in 60 years for the first class but 65 times in 60 years in the second class These changes are not equally spaced over a consumer's lifetime, because they occur more frequently when the women are younger and less often when they are older

Conclusion

Over the course of adulthood, increasingly fewer innovative consumers exhibit high propensities to change their preferred perfume, and increasingly more consumers remain attached to a perfume We also note strong heterogeneity across consumers of different ages, as well as across consumers of the same age

Nostalgia, in the sense of maintaining a preference for perfumes encountered during a person's formative stage, has relatively little influence, in contrast with Holbrook and Schindler's (1989, 1994) assertion that people's preferences peak for cultural and hedonic products they encounter during their formative years Two factors might be at work First, perfume usage and in-store choice imply olfactory sensations because most perfumeries provide testers for all available perfumes In contrast, Holbrook and Schindler's work on nostalgia bears on visual (1994) or auditory (1989) stimuli Imprinting and early preference maintenance may vary according to the type of stimulus Second, we analyze actual choices among currently available products rather than declared attitudes about cultural stimuli that forever remain the same as they were when they launched, such as a hit song or an Oscar-winning movie In the perfume market, although several scents have remained available for decades or even a century, the assortment of perfumes offered today is very different from that which most consumers encountered in their formative years

Our analysis based on attitudinal factor scores provides similar insights If we regress the age of each respondent's preferred perfume on her age and the four orthogonal factors, we find overall significance ($\bar{R}^2 = 231$, $F(5, 236) = 15\ 48$) due to consumer age ($t = 6\ 81$, $p < 001$), innovativeness ($t = -3\ 22$, $p < 001$), and attachment ($t = 2\ 41$, $p < 05$) Neither nostalgia ($t = 1\ 65$) nor longing for the past ($t = -67$) is significant

General Discussion

We analyze the impact of consumer age on brand choice, focusing on an involving category, perfume, in which items can and do remain available for decades and for which stores offer broad assortments Study 1 is based on current perfume choices by female consumers in a large sample Study 2 is based mainly on self-reports by female consumers about the history of their relationship with the perfume they currently use the most Multiple analyses confirm that the older the consumer, the older are the perfumes she uses and that perfumes of the same age tend to be used by the same consumers Using two methods (conditional logit analysis of multiple choices and latent class model of how often consumers change preferred perfumes), we find strong support for H_3 and H_2 but only weak support for H_1 Thus, younger consumers tend to behave innovatively, with frequent changes in their preferred perfume, typically leading them to choose a relatively recent perfume, whereas older consumers tend to remain attached to the same preferred perfume This monotonic change in the relative proportions of innovative behavior and lasting attachments, observed across consumers of different ages, is accompanied by strong heterogeneity among consumers of the same age

Rejecting an Alternative Explanation by Marketing Actions

We could hypothesize that firm marketing efforts explain older consumers' preference for older brands, in that perfume makers might target newer brands to younger consumers and older brands to older consumers, which then would create the observed effect This targeting might encompass both creative (i e , advertisements for new perfumes feature younger models and those for older perfumes feature older models) and media (newer perfumes sending more gross rating points [GRPs] to younger consumers and older perfumes sending more GRPs to older consumers) effects We investigate both

Creative targeting In Appendix C, we provide print advertisements (1997–2004) for the two oldest leading perfumes in the study, both of which launched in the 1920s Chanel N°5 (which still remains among the top three best sellers worldwide) and Shalimar by Guerlain In addition, we provide a mock-up from the 1999–2004 television advertisement directed by Luc Besson and inspired by "Little Red Riding Hood," in which the model Estella Warren, wearing Chanel N°5 perfume and a hood, escapes from the seduced wolf The film was a deliberate attempt to convey a very young and provocative image The models, their clothing, the setting, and the style of the campaigns do not match the average age of the perfumes' users (46 years of age for Chanel and 45 for Shalimar, according to Study 1) Even advertisements for very old perfumes feature very young women in provocative outfits and poses These advertisements attempt to attract women of all ages rather than match the average age of the buyers, we might speculate that potential buyers of these perfumes could react negatively to an advertisement featuring a 45-year-old woman The campaign for Trésor by Lancôme (a leading middle-aged perfume launched in 1990), featuring Ines Sastre, exemplifies that advertisements consistently feature young or very young models, not middle-aged or mature women who match the average age of the perfume users

Media targeting From TNS Media Intelligence, we obtained complete 2002 media plans for press advertising for 12 of the 13 perfumes we investigated in Study 1 (the 13th did not advertise), with the help of Medialand Carthage and ZenithOptimedia, we then computed the GRP targeting for each age segment for 10 perfumes and obtained the results shown in Table 2 Despite their different introduction dates, 9 perfumes adopt similar strategies They all target with about the same strength the three first age segments 15–34 years, 35–49 years, and 50–64 years Both the oldest perfumes dedicate the most GRPs to the two youngest age segments, whereas women 65 years of age and older receive only half the GRPs that younger women receive Only one perfume (introduced in 1994) focuses primarily on the youngest age group (15–34 years)

Overall, perfumes appear to rely on similar advertising strategies, whatever their launch year may be Advertising executions feature young models or actresses, media plans (with one exception) target women across all age ranges, from 15 to 64 years of age, but neglect women 65 years and older Thus, firm marketing efforts cannot explain why older consumers prefer older brands and younger buyers purchase more recent ones

Rejecting an Alternative Explanation by Homogeneous Cohort Tastes

We could hypothesize that each consumer cohort has a specific taste for types of perfumes and that manufacturers constantly develop new perfumes to fit this specific taste, which enables the cohort to maintain its more general preferences over time We reject this potential explanation for two reasons First, a perfume executive (Bastien, personal communication) argues that there is no such thing as "the" taste of a given cohort[6] Successful perfumes launched at approximately the same time and with similar consumer cohort profiles often differ dramatically from one another Chanel N°5 and Shalimar, the two most successful perfumes launched in the 1920s, have notably different scents, as do Anais Anais, Paris, and Opium, three successful perfumes launched around 1980, and Angel and CKOne, which both launched successfully in the 1990s

Second, the stochastic model with two latent classes in Study 2 suggests that a large majority of perfume users change their preferred perfume multiple times over their lifetimes (8 times on average in one latent class and 65 times in the other) This tendency makes it unlikely that consumers stick only to their age cohort's defined "specific taste"

Managerial Implications

The empirical results pertain to perfume choices, but we believe that they should apply to other consumer goods categories as well For manufacturers, we show that mature consumers offer a unique opportunity because they may initiate a long-term attachment at any age, and when they switch to a new product, they likely remain attached to it A smaller proportion of them might adopt a new product, but those who do buy it persistently for a longer period The results contrast with the negative impact of age for consumer electronics adoption (Tellis, Yin, and Bell 2009) This suggests the benefits of targeting advertising broadly to older women, up to 65 years of age, as perfume manufacturers do In addition, mature consumers offer the benefits

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[6] Vincent Bastien is a former chief executive officer of Yves Saint-Laurent Parfums and Sanofi Beauté

TABLE 2
Press GRPs per Age Segment for Ten Leading Perfumes in 2002

	Age Groups				
	15–34	35–49	50–64	65 and Older	All Women
Perfume 1921	345	340	328	161	298
Perfume 1925	608	617	591	300	537
Perfume 1948	248	260	228	123	219
Perfume 1969	115	149	152	90	126
Perfume 1977	211	206	196	108	183
Perfume 1978	8	7	5	3	6
Perfume 1990	254	296	307	187	261
Perfume 1992	330	310	267	120	264
Perfume 1994	205	99	67	19	107
Perfume 1997	486	401	352	182	368

of being increasingly more numerous, having higher incomes, and having a long life expectancy

Manufacturers can benefit from keeping older product options available because older and mature consumers often remain attached to options that they have been using for a long time and may be less willing to try or buy new products In the past two decades, a common approach has been to delete established brands, introduce new brands, and modify the contents of remaining brands, for example, through brand extensions or intense rejuvenating or repackaging of ancient brands Such moves should be considered with great care because they might destroy a precious, irreplaceable brand asset—namely, consumers who have developed an attachment to brands that no longer exist or have been deeply modified In contrast, brands should consider pursuing personal relationships with these loyal consumers For example, loyalty clubs, personal services, prelaunch events, and so on, may strengthen the relationship with loyal customers

Managers can and do satisfy younger buyers' appetites by introducing new brands, new varieties, brands named after currently popular singers or stars, or even seasonal options or special editions for holidays However, manufacturers should interpret any initially high penetration rates among younger consumers with caution because they may only be temporary Young consumers may keep their preferences for a short duration, and the preferred item may lose its innovative appeal quickly as even newer items enter the market

The innovativeness of young consumers may benefit not only new options but also less recent ones because a brand's capacity to attract new consumers is not limited to its first years in the market In our case, even when consumers changed their preferred perfume less than three years ago, they did not universally switch to a recently launched one The median age of the newly adopted item was 3 5 years, with an upper quartile at 8 years and a maximum of 86 years This trend offers another reason for keeping established products available and continuing to advertise them to a broad age target, including younger consumers

Finally, marketers must take the age patterns of their buyers into account when evaluating their brands' market position and future value Two brands with the same current market share may anticipate different futures, according to the ages of their consumers A simple index is the average age of each brand's consumers Another measure considers the ratio of a brand's share among consumers 60 years of age and older, divided by its share among consumers younger than 30 In the first sample, this ratio reaches as high as 300% for some perfumes and as low as 5% for others Such indexes can help marketers assess, at regular intervals, whether their brands' constituency is growing older and at what speed and then compare this level with benchmarks based on other brands and analyze the overall contents of the manufacturer's product portfolio (e g , how many products appeal to a young clientele, and how many attract an older clientele?)

Limitations and Further Research

For many consumers, perfume is a highly involving, emotional, symbolic product The long-lasting attachments that many older consumers develop with perfumes, and conversely the innovativeness of many younger perfume consumers, may be much stronger than similar consumer tendencies toward functional, less involving product categories Further research might try to replicate our analyses in such categories, for example, colas offer a strong contrast to our findings because long-established brands manage to recruit new cohorts of young consumers constantly and still maintain a young-age profile

Perfume has been used for decades, or even centuries, in France, and many French girls begin using perfume early In other countries, perfume is a relatively new category, and women might begin using it later in life For a given perfume, do the results differ across countries and according to the dates at which the perfume was introduced? If age differences occur across countries in terms of a perfume's clientele, can marketers practically rely on global marketing communications that typically employ the same advertisements everywhere?

Appendix A
Further Analyses in Study 1

Perfumes Launched at About the Same Time Tend to Be Used by the Same Consumers

Because the hypotheses assign an important role to the options' introduction date, we specifically consider options with precise introduction dates, as is the case for all 39 specific perfumes listed in the questionnaire (e g , Poison by Dior), each of which had a precise launch date in France We also consider sets of perfumes produced by a same manufacturer (e g , "Another perfume by Azzaro") if all the alternatives in the set were launched within two years Conversely, we set aside sets of perfumes launched by the same manufacturer but at different dates Overall, for each consumer, we analyze 43 observed binary choices Among the 130,411 respondents who checked at least one choice from the full list of 63 options in the questionnaire, 23% used no perfume from this reduced list of 43 options, 33% used one perfume, 20% used two perfumes, and 24% used three perfumes or more

For each pair of perfumes, we measure the extent to which the same consumers use them by computing a tetrachoric correlation between the binary variables Edwards and Allenby (2003, p 322) recommend using tetrachoric correlations to avoid "a downward bias of the estimated (Pearson) coefficient" and suggest hierarchical Bayes correlation estimates with small samples Because both Bayes and tetrachoric estimators are asymptotically consistent (Edwards and Allenby 2003), with our large sample size, we compute tetrachoric correlations using Uebersax's (2006) method

Which Groups of Perfumes Are Used?

Because of the difficulties associated with modeling 43 perfumes or sets of perfumes simultaneously, we analyze choices at a more aggregate level, using the three previously identified groups of perfumes HP perfumes (32% of respondents use at least one of them), Null perfumes (46%), and HN perfumes (39%) Again, Figure 1 illustrates the penetration of each group of perfumes

How Many Perfumes from Each Group?

We model the likelihood that consumer i will choose n_{i1}, n_{i2}, and n_{i3} perfumes from groups 1 (HP), 2 (Null), and 3 (HN) as a function of the probabilities P_{i1}, P_{i2}, and P_{i3} of choosing each group on each choice occasion The associated likelihood is as follows

$$\text{(A1)} \qquad L = \prod_{i=1}^{I} \frac{(n_{i1}+n_{i2}+n_{i3})!}{n_{i1}!\,n_{i2}!\,n_{i3}!} P_{i1}^{n_{i1}} P_{i2}^{n_{i2}} P_{i3}^{n_{i3}},$$

where I is the total number of consumers, P_{ig} is the probability that consumer i chooses a perfume from group g (g = 1–3), and n_{ig} equals the number of perfumes from group g (g = 1–3) chosen by consumer i

In Table A1, we compare the quality of fit obtained by different models, using all 130,411 observations We estimate all models by maximum likelihood

We use as a reference a homogeneous multinomial model with no explanatory variable and, thus, the same probabilities—P_{i1}, P_{i2}, and P_{i3}—for all consumers i It requires only two estimation parameters We first assess the impact of the available demographic variables (age, occupation, marital status, region, card usage) on P_{i1}, P_{i2}, and P_{i3} without assuming heterogeneity For each explanatory variable, we estimate a multinomial logit model The likelihood ratio (LR) tests in Table A1 indicate that consumer age has much greater explanatory power than any other consumer characteristic The chi-square value is 22,887 (d f = 2), more than 25 times greater than the chi-squares obtained with other demographics The coefficients of age are positive for the HN perfumes and negative for the HP perfumes

In a second step, we assess whether taking consumer heterogeneity into account, even in the absence of explanatory variables, improves model fit significantly compared with the reference model We use a latent class approach, assuming within each latent class a multinomial model with the same probabilities for all consumers The best improvement over the basic reference model results with three latent classes, which produces a chi-square value of 7888 (d f = 6) Because this improvement is much smaller (with more degrees of freedom) than that obtained when we use age as an explanatory variable, without heterogeneity, we combine the two approaches and introduce age in the latent class model Using four or five latent classes produces limited additional improvements over the solution obtained with three classes (χ^2 = 28,769, d f = 6, compared with the reference model) We keep three latent classes, with respective probabilities of 61%, 19%, and 20% Overall, the three successive statistical analyses support H_4 The older a consumer, the greater are her preferences for long-established options

Nostalgia, Declining Innovativeness, or Attachment?

We analyze choice between individual perfumes Because a logit analysis of choice among 43 options would be difficult, we limit the analysis to perfumes used by at least 5% of respondents, that is, the 13 leading perfumes

In Table A2, we present the estimations of eight conditional logit models We begin with a null model in which age has no impact because β_1, β_2, and β_3 are set equal to 0 and the perfume dummies D_{rp} serve as the only predictors When we add a single specification to the null model, the likelihood always improves significantly The improvement observed when we add the specification based on attachment alone (LR = 21,862, d f = 1) is greater than that obtained when we include the specification based on innovativeness alone (LR = 15,334, d f = 1) or nostalgia alone (LR = 9207, d f = 1) If we add a second specification, we again observe the greatest log-likelihood improvement with attachment (LR = 12,658 or 7937, d f = 1), compared with innovativeness (LR = 7710 or 1409, d f = 1) or nostalgia (LR = 1583 or 3, d f = 1) Finally, with a third specification, the same hierarchy emerges, such that the best improvement occurs when we add attachment (LR = 6394, d f = 1), followed by innovativeness (LR = 1423) and nostalgia (LR = 17) This order of importance corresponds to

TABLE A1
Heterogeneity Analysis: Log-Likelihood for Different Models (Study 1)

Model	Log-Likelihood Compared with Reference Model	χ^2	Number of Parameters
Homogeneous multinomial (reference)	**–251,672**	**—**	**2**
Multinomial logit, f of age	**–240,228**	**22,887**	**4**
Multinomial logit, f of marital status	–251,228	889	4
Multinomial logit, f of occupation	–251,374	597	12
Multinomial logit, f of card usage	–251,315	714	6
Multinomial logit, f of region	–251,499	346	6
Multinomial distribution, 2 latent classes	–248,044	7255	5
Multinomial distribution, 3 latent classes	**–247,728**	**7888**	**8**
Multinomial distribution, 4 latent classes	–247,727	7890	11
Multinomial logit, f of age, 2 latent classes	–238,000	27,346	9
Multinomial logit, f of age, 3 latent classes	**–237,288**	**28,769**	**14**
Multinomial logit, f of age, 4 latent classes	–237,259	28,827	19
Multinomial logit, f of age, 5 latent classes	–237,232	28,881	24

Notes The bold row in each category of models corresponds to the model that maximizes the log-likelihood and obtains the highest chi-square statistic in that category of models Therefore, this model is the most predictive

TABLE A2
LRs and Parameter Estimates for Different Versions of the Conditional Logit Analyses (Study 1)

	Model		Parameter Estimates (χ^2 Test)		
Predictors	**–2 Log (L)**	**LR χ^2 (d.f.) with Null Model**[a]	**Nostalgia**	**Innovativeness**	**Attachment**
12 perfume dummies[b]	585,748	—	—	—	—
and nostalgia	576,541	9207 (1)	.73 (9397*)	—	—
and innovativeness	570,415	15,334 (1)	—	2.59 (13,234*)	—
and attachment	563,886	21,862 (1)	—	—	1.64 (20,702*)
and nostalgia and innovativeness	568,831	16,917 (2)	.35 (1602*)	2.10 (6961*)	—
and attachment and innovativeness	562,477	23,271 (2)	—	1.04 (1379*)	1.29 (7778*)
and attachment and nostalgia	563,883	21,865 (2)	.02 (3.22 $p = .07$)	—	1.62 (11,791*)
and attachment and nostalgia and innovativeness (full model)	562,460	23,288 (3)	–.04 (16.9*)	1.07 (1390*)	1.33 (6190*)

*$p < .0001$
[a] Null model: perfume dummies only; LR chi-square (d.f.) are all significant at the .0001 level.
[b] Parameter estimates are not reported for simplicity.

the values of the Wald test in the full model, which combines all three specifications and produces the best fit overall, as well as the best improvement compared with the null model ($\chi^2 = 23{,}288$, d.f. = 3).

Appendix B
The Renewal Model in Study 2

The homogeneous model (same λ_n for all consumers) does not fit the data well. With the maximum likelihood estimate of λ (.1140), the model predicts too few short durations (i.e., less than three years, predicted frequency = 29.0%, observed frequency = 40.9%) and too few long durations (20 years or more, predicted frequency = 10.2%, observed frequency = 17.9%) ($\chi^2 = 43.5$, d.f. = 2, $p < .0001$). Therefore, we estimate by maximum likelihood several heterogeneous models, which fit the observed data better (Table B1). In Model 2, heterogeneity across consumers is independent of age, and we consider two latent classes (using three classes provides no improvement), each with a specific λ, and the same probability for all consumers of belonging to the first class. In Model 3, heterogeneity is a function of age, and λ_n becomes a linear function of the consumer's age. Both models fit significantly better than the homogeneous model, but the improvement is much greater for the age-dependent ($\chi^2 = 138.94$, d.f. = 1) than the age-independent ($\chi^2 = 39.77$, d.f. = 2) model.

This leads us to add age dependency to the latent class approach in two forms. In Model 4, we assume a fixed λ in each of the two latent classes, and the probability of belonging to the first class depends on age. With the fifth model, the probability of belonging to the first class is the same for

TABLE B1
Heterogeneous Models of Preferred Perfume Renewal (Study 2)

Model Description	Value of λ (Expected Value of Duration is $1/\lambda$)	Log-Likelihood	LR Test Against Homogeneous Model (d.f.)
Homogeneous (same λ for all consumers)	$\lambda = .1140$	–815.15	—
Two latent classes (one λ in each class), same probability of belonging to first class for all consumers	$\lambda 1 = .693$ $\lambda 2 = .0838$ $p = .301$	–795.26	39.77 (2)
λ linear function of consumer age	$\lambda = \exp[5.343 - 1.954 \times \ln(\text{age})]$	–745.68	138.94 (1)
Two latent classes (one λ in each class), probability of belonging to first class a function of age	$\lambda 1 = .394$ $\lambda 2 = .0693$ $p = \text{logit}[28.61 - 7.72 \times \ln(\text{age})]$	–757.29	115.72 (3)
Two latent classes (λ a function of age in each class), same probability of belonging to first class for all consumers	$p = .842$ $\lambda 1 = \exp[4.83 - 1.847 \times \ln(\text{age})]$ $\lambda 2 = \exp[13.80 - 3.876 \times \ln(\text{age})]$	–741.52	146.52 (4)

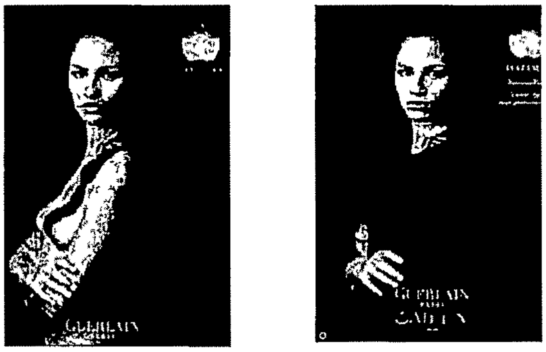
all respondents, but in each class, λ_n is a linear function of the consumer's age (with different coefficients) This last model produces the best fit with the observed data, and its interpretation summarizes the conclusions from Study 2 The expected duration of a consumer's relationship with her preferred perfume increases significantly with age (χ^2 = 106 75, d f = 2, between Models 2 and 5), and additional heterogeneity exists across consumers of the same age

APPENDIX C
Perfume Advertising

A: Chanel N°5 in 2002

Press **Television**

B: Guerlain Shalimar in 2003


French Version **Middle Eastern Version**

C: Trésor by Lancôme: Press

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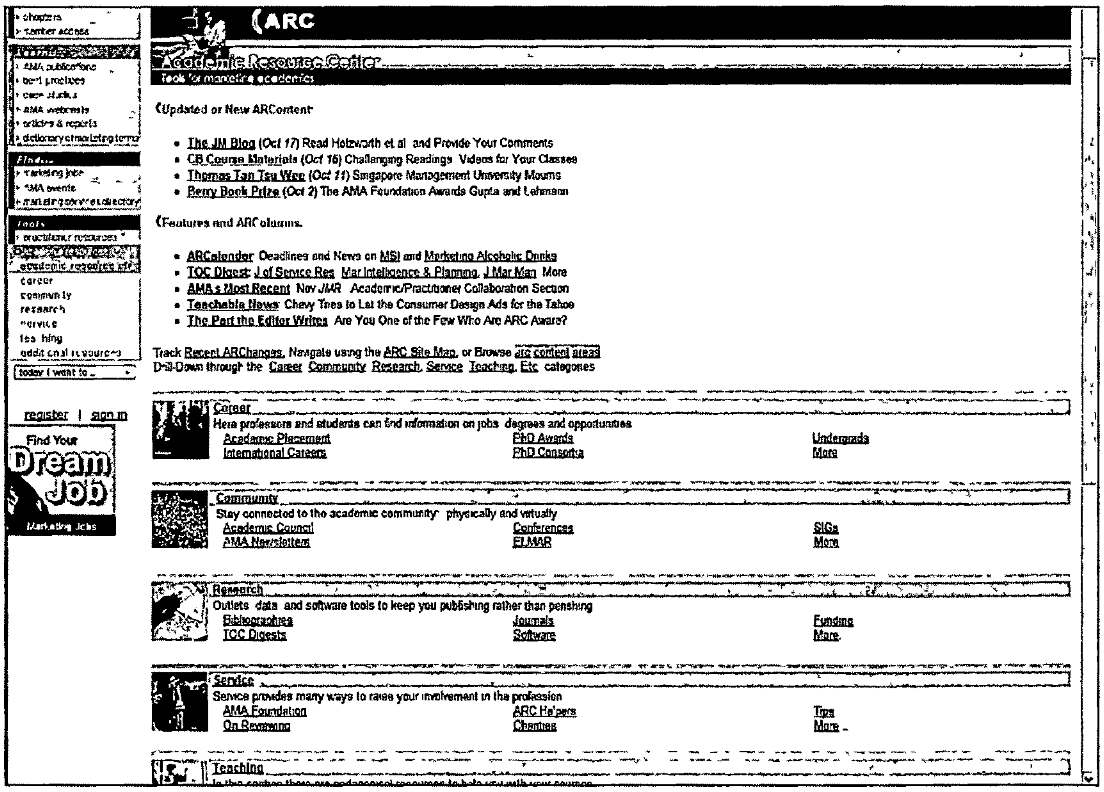

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Brand Attachment and Brand Attitude Strength: Conceptual and Empirical Differentiation of Two Critical Brand Equity Drivers

Research has not verified the theoretical or practical value of the brand attachment construct in relation to alternative constructs, particularly brand attitude strength. The authors make conceptual, measurement, and managerial contributions to this research issue. Conceptually, they define brand attachment, articulate its defining properties, and differentiate it from brand attitude strength. From a measurement perspective, they develop and validate a parsimonious measure of brand attachment, test the assumptions that underlie it, and demonstrate that it indicates the concept of attachment. They also demonstrate the convergent and discriminant validity of this measure in relation to brand attitude strength. Managerially, they demonstrate that brand attachment offers value over brand attitude strength in predicting (1) consumers' intentions to perform difficult behaviors (those they regard as using consumer resources), (2) actual purchase behaviors, (3) brand purchase share (the share of a brand among directly competing brands), and (4) need share (the extent to which consumers rely on a brand to address relevant needs, including those brands in substitutable product categories).

Keywords: brand management, consumer behavior, marketing strategy, brand attachment, attitude strength

Academic researchers and practitioners in marketing have shown significant interest of late in studying consumers' attachment to brands (Chaplin and John 2005; Fedorikhin, Park, and Thomson 2008; Park and MacInnis 2006; Park et al. 2009; Schouten and McAlexander 1995; Thomson 2006). As a construct that describes the strength of the bond connecting the consumer with the brand, attachment is critical because it should affect behaviors that foster brand profitability and customer lifetime value (Thomson, MacInnis, and Park 2005). At the same time, marketers have long invoked the constructs of attitude valence and strength as key antecedents to consumer behavior. We define attitude valence as the degree of positivity or negativity with which an attitude object (in the current context, a brand) is evaluated. We conceptualize brand attitude strength as the positivity or negativity (valence) of an attitude weighted by the confidence or certainty with which it is held (i.e., the extent to which it is considered valid; see Petty, Briñol, and DeMarree 2007). Strong attitudes result from effortful thought about the attitude object (Petty and Cacioppo 1986), most often because of its personal relevance. This effortful thought and the confidence with which the attitude object is held guide behavior. Prior research has shown that brand attitude strength predicts behaviors of interest to firms, including brand consideration, intention to purchase, purchase behavior, and brand choice (Fazio and Petty 2007; Petty, Haugtvedt, and Smith 1995; Priester et al. 2004).

The rich history of research on brand attitude strength raises questions about the need for a construct such as brand attachment. Does attachment provide value beyond measures of brand attitude strength? The answer to this question is elusive because research to date has not verified how brand attachment and brand attitude strength differ conceptually or empirically. Nor has research differentiated what unique consumer behaviors, if any, each predicts.

The current research makes three key contributions pertinent to these issues. First, we differentiate the brand attachment construct from brand attitude strength conceptually, arguing that the two constructs have distinct conceptual properties and entail different formation processes. Second, we validate this distinction empirically, developing a novel scale that maps the conceptual properties of brand attachment and assessing its relationship to attitude strength. Third, and most significantly, we empirically demonstrate

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that attachment and attitude strength have distinct behavioral implications Brand attachment more accurately predicts intentions to perform behaviors that use significant consumer resources (time, money, reputation) It is also a stronger predictor of actual consumer behaviors than brand attitude strength We observe these effects in terms of consumer purchase behavior, brand purchase share (i e , choice among directly competing brands), and need share (i e , choice among brands targeting similar needs), even after controlling for consumer inertia (i e , past behaviors) and other potential factors Beyond their theoretical significance, the results have significant managerial implications, suggesting that brand attachment serves as the ultimate destination for customer–brand relationships As far as we are aware, this is the first article to examine this diverse set of behavioral outcomes from brand attachment, and it is the first to demonstrate these effects in relation to attitude strength

Conceptual Distinction Between Brand Attachment and Brand Attitude Strength

Attachment

Although research has examined attachment in interpersonal contexts, research in marketing suggests that consumers can also develop attachments to marketplace entities, including product brands (Fournier 1998, Keller 2003, Schouten and McAlexander 1995), celebrities (Thomson 2006), and special possessions (Ball and Tasaki 1992, Kleine and Baker 2004) Notably, despite the growing popularity of the attachment construct, the conceptual properties of this construct remain elusive (Park, MacInnis, and Priester 2006, 2009)

Conceptual properties We define brand attachment as the strength of the bond connecting the brand with the self Consistent with attachment theory (Mikulincer and Shaver 2007), this bond is exemplified by a rich and accessible memory network (or mental representation) that involves thoughts and feelings about the brand and the brand's relationship to the self Two critical factors reflect the conceptual properties of brand attachment brand–self connection and brand prominence

Brand–self connection The idea that attachment involves a bond (with the brand included as part of the self) suggests that a critical aspect of attachment involves the cognitive and emotional connection between the brand and the self, defined here and elsewhere as brand–self connection (Chaplin and John 2005, Escalas 2004, Escalas and Bettman 2003) By categorizing the brand as part of the self, a consumer develops a sense of oneness with the brand, establishing cognitive links that connect the brand with the self Though cognitive in its representation, this brand–self linkage is inherently emotional (Mikulincer and Shaver 2007, Thomson, MacInnis, and Park 2005), involving myriad and potentially complex feelings about the brand, including sadness and anxiety from brand–self separation, happiness and comfort from brand–self proximity, and pride from brand–self display Consumers can be connected to a brand because it represents who they are (e g , an identity basis) or because it is meaningful in light of goals, personal concerns, or life projects (an instrumentality basis, Mittal 2006)

Brand prominence In addition to brand–self connection, previous research suggests that the extent to which positive feelings and memories about the attachment object are perceived as top of mind also serves as an indicator of attachment According to Mikulincer (1998) and Collins (1996), positive memories about the attachment object (another person) are more prominent for people who are highly attached to an attachment object than for people who show weak attachment The notion that brand–self connections develop over time and through experience suggests that brand-related thoughts and feelings become part of a person's memory and vary in the perceived fluency or the ease with which they are brought to mind We call this component "brand prominence" Prominence reflects the salience of the cognitive and affective bond that connects the brand to the self This salience is reflected by the perceived (1) ease and (2) frequency with which brand-related thoughts and feelings are brought to mind Thus, consumers' attachment in relation to two brands with the same degree of brand–self connection is greater for the brand that they perceive as more prominent

Importance of both indicators Brand–self connection is a core component of attachment because it centrally reflects the definition of attachment as the bond connecting a person with the brand However, we suggest that the inclusion of brand prominence adds precision in measuring the "strength" of the bond connecting the brand with the consumer This is so for two reasons

First, when thoughts and feelings about the brand are highly accessible, prominence may exert a disproportionately strong influence on decision making (Alba and Marmorstein 1987) and, ultimately, on consumer purchase behavior (Akçura, Gonul, and Petrova 2004) Specifically, consumers for whom brand–self connection is high and for whom associations are also prominent may be more likely to engage in relationship-sustaining behaviors than those for whom the brand–self connection is high but prominence is low This is true because the brand's prominence makes relationship-sustaining activities salient as well Thus, there may be greater behavioral commitment in the form of brand loyalty and other behaviors (e g , positive word of mouth, more time, money, and energy spent on relationship-sustaining behaviors) when both brand–self connection and prominence are high This logic is also consistent with prior work (Akçura, Gonul, and Petrova 2004, Alba and Chattopadhyay 1986, Alba and Marmorstein 1987), which suggests that the prominence of feelings and thoughts can affect behavior by inhibiting recall of other thoughts and feelings (Alba and Chattopadhyay 1986) As relationship-sustaining activities become more prominent, relationship-inhibiting behaviors may be reduced

Second, we noted previously that consumers can develop a strong brand–self connection because (1) the brand is part of a person's self-conception and/or (2) it has instrumental value The former emphasizes brand–self connections in terms of who a person is and a person's identity It might be expected that when brands are identity based (e g , a person's iMac is viewed as part of who he or she is and what he or she stands for), prominence is high because self-activation and brand activation co-occur If so, adding prominence may add little to the assessment of attachment because prominence and brand–self connection covary However, prominence may serve as an important indicator of attachment when consumers are connected to a brand because of its instrumental value (i e , a person's iMac is important in fulfilling entertainment- and work-related goals) That is, when a brand has instrumental value, attachment should be stronger when brand-related thoughts and feelings are more versus less prominent As prominence increases, brand-related thoughts and feelings are part of everyday life tasks, making brand attachment stronger

Brand attachment and emotions Emotions are often evoked when attachment is strong because emotions are inherent to brand–self connection and prominence factors Indeed, the emotional nature of attachment has led to a measure of attachment based purely on emotions Thomson, MacInnis, and Park's (2005) three-factor model characterizes brand attachment in terms of three emotional components (1) affection (characterized by the emotion items "affectionate," "loved," "friendly," and "peaceful"), (2) passion (characterized by the items "passionate," "delighted," and "captivated"), and (3) connection (characterized by the items "connected," "bonded," and "attached")

First, although we agree that attachments are emotional, in contrast to Thomson, MacInnis, and Park (2005), the set of specific emotions underlying attachment is not central to our conceptualization (or measure) of attachment Indeed, we are agnostic to the specific set of positive feelings linked to the brand Feelings linked to brand–self connection and brand prominence could be numerous in type, and different feelings may be idiosyncratically linked to specific person–brand autobiographical meanings and their prominence Such feelings could include those that Thomson, MacInnis, and Park note However, they could also include joy, excitement, pride, contentment, relief, nostalgia, or any other feelings retrieved from brand–self memories

Second, although passion may indeed characterize strong brand attachment as Thomson, MacInnis, and Park (2005) suggest, the degree of passion linked to strong attachment may depend on the relationship's evolutionary status Research indicates that passion may wane as relationships progress (Ahuvia, Batra, and Bagozzi 2009) At the same time, relationship progression brings with it more brand–self experiences that should deepen the brand–self bond and enhance its salience Thus, time may be associated with waning passion, but it may also be associated with enhanced attachment Representing attachment based on passion may not fully capture all relationships characterized by strong attachment

Third, attachment is more than emotions, it is reflected by mental representations (rich cognitive schemata) that include brand–self cognitions, thoughts, and autobiographical brand memories (Berman and Sperling 1994, Mikulincer and Shaver 2007) that measures of emotions may not capture As such, we do not include emotions as factors that indicate brand attachment Instead, we reason that our two-factor model of attachment (brand–self connection and brand prominence) captures the emotions that accompany attachment [1]

Brand attachment and brand relationship quality The brand attachment concept also shares some conceptual resemblance to Fournier's (1998) seminal concept of brand relationship quality (BRQ) Both concepts propose similar outcomes (e g , accommodations, devaluation of alternatives) Furthermore, Fournier's concept includes brand–self connection as one of the six indicators of BRQ, assessing the "quality, depth, and strength" of a consumer's relationship with a brand (Fournier 1998, p 363) However, our measure is designed to reflect only the strength dimension as it pertains to brand–self connection Moreover, BRQ is designed to accommodate a host of relationship types (e g , best friends, kinships, dependencies, enslavements) and thus accommodates relationship types that can be positive, neutral, or negative However, brand attachment neither specifies relationship type nor accommodates negative relationships

Differentiating Brand Attachment from Brand Attitude Strength

Brand attachment and brand attitude strength share several similarities Both are psychological constructs that reference a brand Both involve assessments of "strength" (i e , of the bond or the attitude) Both assume that high levels of their respective constructs are based on substantial processing regarding the brand Both have implications for marketing-relevant consumption behaviors, such as brand purchase, repeat purchase, and willingness to recommend a brand Moreover, we surmise that when consumers are strongly attached to a brand, they can also have a positive and strong attitude toward it However, we regard brand attachment and brand attitude strength as distinct constructs because they differ in several fundamental respects

First, the constructs differ in the nature of affect they implicate Whereas attachment implicates "hot" affect from the brand's linkage to the self (Mikulincer and Shaver 2007), strong brand attitudes reflect evaluations and "cold" affect (Cohen and Areni 1991) involving a judgment about the brand This difference in affect has important implications for brand behaviors, as we discuss subsequently In this sense, the constructs differ in their motivational power because attachment, unlike attitude strength, has emotional and self-implications that serve as more powerful drivers of behavior

Second, although both constructs involve assessments of strength, the entity to which "strength" applies differs With attachment, what is strong is the bond that connects the brand with the self Bonds are stronger (1) as connections between the brand and the self become closer and (2) as brand-related thoughts and memories become more prominent With strong attitudes, what is strong is a person's judgment of the goodness or badness of the brand Thus, with attachment, strength references the brand–self relationship Such strength is indicated by the connection between the self and the brand and a *subjective* sense of brand prominence With strong attitudes, strength references the attitude object and the confidence with which it is held Such strength is often indicated by *objective* indicators of attitude accessibility Moreover, the factors that lead to variation in strength differ With strong brand attitudes, strength varies not as a function of brand–self connections or the prominence of brand thoughts but rather as a function of the confidence with which the judgment is rendered (Petty, Briñol, and DeMarree 2007)

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[1] Studies 2 and 3 compare our brand attachment measure with Thomson, MacInnis, and Park's (2005) measure Both studies strongly support the added value of the former over the latter We do not report these results given space constraints

Third, the constructs differ in their range of valence Strong attitudes can range from positive to negative, such that attitude strength is conceptualized on a bipolar valence dimension Thus, attitudes range from strong–positive to weak–positive to weak–negative to strong–negative Positive and negative ends anchor the attitude strength continuum, and behavior is linked with either end of that continuum In other words, just as strong positive attitudes predict behavior (e g , purchase), strong negative attitudes also predict behavior (e g , purchase avoidance) In contrast, attachments vary in strength from weak to strong The opposite of strong attachment is weak attachment What varies is not the valence of the attachment but rather the strength of the bond connecting the brand with the self and its prominence

Finally, whereas attachment is largely time dependent, brand attitude strength need not be Specifically, attachment includes relationship-based working models (mental representations) that reflect prominent autobiographical and episodic memories pertaining to the self and the attachment object Such models also include procedural knowledge about how the brand can regulate a person's emotions (Collins and Read 1994, Mikulincer and Shaver 2007) Such self–brand links develop over time (Mikulincer and Shaver 2003) In contrast, strong brand attitudes need not be time dependent They are based on thoughtful processing (elaboration) and can be formed in a limited time Because attachments develop over time while strong brand attitudes need not, attachment may reflect a more advanced stage of relationship development

Predicting the Differential Impact of Brand Attachment and Brand Attitude Strength

Having conceptually distinguished brand attachment from brand attitude strength, we now turn to understanding whether they predict different outcomes This is a novel issue because prior research has not yet distinguished the differential effects each predicts Thomson, MacInnis, and Park (2005) demonstrate that their measures of emotional attachment and attitude valence have distinct effects, with attachment better predicting brand loyalty and willingness to pay a price premium However, their research does not study attitude strength Because attitude strength is more closely tied to actual purchase behavior than attitude valence (Fazio 1995, Petty, Haugtvedt, and Smith 1995, Priester et al 2004), a more convincing case for the power of attachment would be made if its impact were different from that of attitude strength

Increasing research shows that attitude strength predicts purchase behavior, with the direction of the behavior (being inclined or disinclined toward purchase) varying as a function of whether attitude valence is strongly positive or strongly negative (Fazio 1995, Petty, Haugtvedt, and Smith 1995) Most often studied are relatively simple behaviors, such as purchase intentions or product choice (Fazio, Powell, and Williams 1989, Petty, Haugtvedt, and Smith 1995) We add to the literature by suggesting that within a given consumption context, behaviors can be conceptualized along a behavioral hierarchy that reflects their enactment difficulty We conceptualize difficulty as the extent to which the behaviors expend economic, social, psychological, temporal, or physical resources We use an extended version of self-expansion theory to develop these ideas As we describe subsequently, our theorizing predicts novel behavioral outcomes that have not been linked with brand attachment or strong brand attitudes—specifically, intentions and actual behaviors, including actual purchase, brand purchase share, and need share Self-expansion theory provides a basis for these predictions

Self-Expansion Theory and Behaviors

Self-expansion theory (Aron et al 2005) posits that people possess an inherent motivation for self-expansion, or a desire to incorporate others (here brands) into their conception of "self" The more an entity (brand) is included in the self, the closer is the bond that connects them Attachment develops over time as relationships between the self and the entity evolve Over time, a cognitive reorganization takes place such that the self expands to include the entity People develop a positive feeling of "oneness" with the entity (Aron, Aron, and Smollan 1992) and tend to view the entity's resources as their own (Mittal 2006)

We add to self-expansion theory by proposing that consumers who are attached to brands are not just recipients of the brand's resources (i e , consumers come to regard the brand's resources as their own), they also actively invest their own resources in the brand to maintain their brand relationship Thus, consumers who are highly attached to a brand are more motivated to expend resources of their own in the process of self-expansion Such resources include the allocation of (1) social resources, such as defending the brand to others and derogating alternatives (Johnson and Rusbult 1989), (2) financial resources, as evidenced by a willingness to pay a higher price for the brand (Thomson, MacInnis, and Park 2005) or the willingness to devote a greater share of expenditures to the brand (rather than to other brands in the same or related product categories), and (3) time resources, as illustrated by involvement in brand communities and brand promotion through social media (Muñiz and O'Guinn 2001, Schouten and McAlexander 1995) The more attached a person is to the brand, the more likely he or she is to move from an egocentric to a more reciprocal brand relationship that involves sharing resources with the brand As such, consumers who are highly attached to a brand should treat the brand preferentially and engage in restorative behaviors that ensure brand relationship continuation (Aron, Aron, and Smollan 1992, Aron et al 2005, Mikulincer 1998)

Impact on Intentions to Perform Difficult Behaviors

We expect that consumers' intent to enact difficult behaviors along the behavioral hierarchy (those that use more of their own resources) is greater when attachment is strong (versus weak) This is so because a feeling of oneness is accompanied by hot affect, which is highly motivational (Mikulincer and Shaver 2007) Because attached consumers view brands as part of themselves and have salient thoughts and feelings about the brand, they should be more willing to use greater resources of their own, resources that require the enactment of difficult behaviors to maintain that relationship The greater the attachment, the more difficult the behavior the consumer is willing to enact to maintain the brand relationship Attitude strength should be less able to predict these relationship-maintaining, -sustaining, and -restoring behaviors because the brand is not connected to the self and thus is less strongly linked to resource allocation for the purposes of sustaining a brand relationship This novel extension of self-expansion theory leads us to predict the following

> H_1 Brand attachment is a better indicator of a consumer's intentions to perform difficult behaviors than brand attitude strength

Impact on Actual Purchase Behavior

Whereas H_1 examines intentions, a long history of research shows that intentions and actions do not always correspond This is because situational (e g , brand unavailability), normative (e g , social constraints), behavioral (e g , habits), and financial (price increase) constraints may preclude people from actualizing intentions into behaviors (Fishbein and Ajzen 1975, Shepphard, Hartwick, and Warshaw 1988) When the behavior itself involves significant resources, enactment difficulty will be even higher We posit that brand attachment acts as a stronger predictor of actual difficult-to-enact behaviors than strong brand attitudes Strongly attached consumers incorporate a brand as part of their self and hold salient thoughts and feelings about it On the basis of perceived oneness with a brand, consumers should be more motivated to enact relationship-sustaining behaviors that are difficult to perform than consumers with strong brand attitudes Therefore, we predict the following

> H_2 Brand attachment is a better indicator of a consumer's actual purchase behavior than brand attitude strength

Brand Purchase Share

We also expect that brand attachment better predicts a brand's purchase share, defined as the share of a brand among directly competing brands (i e , if the number of competing brands a consumer purchases in a given product category is 0, the focal brand's purchase share is 100%) When consumers are strongly attached to a brand, competing brands will be less prominent and linked less strongly to the self As a result, competing brands will be less likely to be regarded as substitutes Work in attachment theory and psychology indicates that people perceive attached objects as irreplaceable, other objects will not serve as substitutes (Bowlby 1980) Thus, a consumer who is strongly attached to a brand of running shoes (e g , Nike) is less likely to use competing brands In contrast, brand attitude strength does not necessarily have the same implications for brand purchase share A person can have a strong positive attitude toward one brand while having a similar strong positive attitude toward another brand Thus, we anticipate the following

> H_3 Brand attachment is a better indicator of brand purchase share (the share of a brand among directly competing brands) than brand attitude strength

Need Share

We also expect that brand attachment better predicts the brand's share of use among substitutable alternatives, specifically, need share For example, a consumer who is strongly attached to a brand of soft drinks is not only less likely to buy competing soft drinks but also less likely to buy other beverages (e g , tea, coffee, water, juice) Likewise, a consumer who is attached to his or her iPhone may not only be more likely to allocate more monetary resources to it (than competing cell phone alternatives) but also be more likely to use the iPhone as a source of information and entertainment than use products from competing-needs categories (e g , newspapers, television, magazines) The brands to which consumers are highly attached capture consumers' minds and hearts Therefore, attached consumers are less likely to rely on alternatives, even in other categories that fill the same need Thus, we predict the following

> H_4 Brand attachment is a better indicator of brand need share (the relative use of a brand compared with substitutable alternatives) than brand attitude strength

Study 1: Measuring Brand Attachment

We developed a scale designed to map the conceptual properties of the brand attachment construct We generated a set of items designed to tap brand–self connections and the prominence of brand thoughts and feelings We generated ten indicators of attachment, five each for the brand–self connection and prominence components Participants evaluated all items on 11-point scales anchored by "not at all" (0) and "completely" (10)

We analyzed consumers' responses to the ten-item scale using three different brands (Quaker Oats Oatmeal, Apple iPod, and a local university) Through exploratory factor analyses using oblique factor rotation, we reduced the ten-item scale to eight items The full list of items constituting this scale and results pertinent to this pretest appears in Table 1

Although the resultant eight-item scale (five items reflecting brand–self connection and three items representing brand prominence) is not unusually long for academic use, we wanted to develop a more parsimonious scale that would lend itself to marketing practice Therefore, we selected items that best map the conceptual definition of the

TABLE 1
Study 1: Factor Loadings for the Two-Factor Model of Brand Attachment

	Three Different Stimuli					
	Quaker Oats Oatmeal		Apple iPod		University	
Items	**Brand–Self Connection**	**Prominence**	**Brand–Self Connection**	**Prominence**	**Brand–Self Connection**	**Prominence**
To what extent is (brand name) part of you and who you are?	*90*	*37*	*89*	*48*	*92*	*52*
To what extent do you feel personally connected to (brand name)?	*94*	*39*	*91*	*51*	*88*	*53*
To what extent do you feel emotionally bonded to (brand name)?	92	45	90	57	91	54
To what extent is (brand name) part of you?	91	41	92	54	91	48
To what extent does (brand name) say something to other people about who you are?	75	40	75	52	84	54
To what extent are your thoughts and feelings toward (brand name) often automatic, coming to mind seemingly on their own?	*41*	*89*	*57*	*88*	*56*	*85*
To what extent do your thoughts and feelings toward (brand name) come to your mind naturally and instantly?	*46*	*91*	*53*	*93*	*52*	*93*
To what extent do your thoughts and feelings toward (brand name) come to mind so naturally and instantly that you don't have much control over them?	42	90	52	91	49	92
To what extent does the word (brand name) automatically evoke many good thoughts about the past, present, and future?	77	52	70	74	72	70
To what extent to you have many thoughts about (brand name)?	69	61	74	60	69	63

Notes Italicized items represent brand–self connection and prominence in the final attachment scale

two attachment components based on statistical grounds (strong factor loadings and reliability tests) For brand–self connection, these items are as follows (1) "To what extent is [Brand Name] part of you and who you are?" and (2) "To what extent do you feel that you are personally connected to [Brand Name]?" These items represent the identity and instrumentality bases of brand–self connection, respectively, that we described previously

For brand prominence, the items are (1) "To what extent are your thoughts and feelings toward [Brand Name] often automatic, coming to mind seemingly on their own?" and (2) "To what extent do your thoughts and feelings toward [Brand Name] come to you naturally and instantly?" These two items, which reflect myriad brand-relevant thoughts and feelings and the lack of control over their activation, capture the retrieval ease and frequency characteristic of brand prominence Note that one of the two prominence measure items explicitly captures the frequency ("often") of brand-related thoughts and feelings We also phrased these two items to describe multiple (versus a single) thoughts and feelings, thus capturing the frequency aspect of brand prominence The brand prominence measure does not distinguish the valence of thoughts and feelings about a brand, because the distribution of positive versus negative feelings linked to the brand are reflected in the degree of brand–self connection

Note that reducing the number of indicators (from eight to four) provides a more parsimonious scale without significant loss of reliability Reduction also provides a more conservative test of our hypotheses [2]

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[2] To determine whether and to what extent the reduced set of items affected the reliability of each attachment component, we examined the change in alpha coefficient for the eight-item versus the more parsimonious four-item attachment scale For brand–self connection, the alpha coefficients for the five-item scale were $\alpha = 95_{\text{oats}}$, $\alpha = 94_{\text{iPod}}$, and $\alpha = 95_{\text{university}}$, and the two-item scale coefficients were $\alpha = 92_{\text{oats}}$, $\alpha = 90_{\text{iPod}}$, and $\alpha = 86_{\text{university}}$ The alpha coefficients for the three-item brand prominence scale were $\alpha = 94_{\text{oats}}$, $\alpha = 94_{\text{iPod}}$, and $\alpha = 94_{\text{university}}$, and the two-item scale coefficients were $\alpha = 91_{\text{oats}}$, $\alpha = 90_{\text{iPod}}$, and $\alpha = 89_{\text{university}}$ We also compared Escalas and Bettman's (2003) seven-item brand–self connection measure ($\alpha = 96$) with our two-item scale ($\alpha = 95$) using a different sample of 221 respondents Combined, these results reveal that reducing the number of indicators provides a parsimonious attachment scale that does not sacrifice reliability

Study 2: Attachment and Attitude Strength as Distinct Constructs

We designed Study 2 to accomplish two things First, we wanted to test the assumption that both brand–self connection and brand prominence are indicators of brand attachment Second, we wanted to demonstrate that attachment and attitude strengths are empirically discriminable

Method

Participants and design One hundred eight undergraduate marketing students completed a booklet in exchange for partial course credit The booklet asked respondents to report their thoughts and feelings toward Apple iPod We administered the survey in a group setting (30–40 per group)

Measures Participants provided all responses on 11-point scales anchored by "not at all" (0) and "completely" (10) We used the four-item brand attachment scale (for indicators of brand–self connection, r = 91, for indicators of brand prominence, r = 71) Two items measured separation distress "To what extent would you be distressed if the iPod were discontinued?" and "To what extent is it difficult to imagine life without the iPod?" (r = 82)

We assessed brand attitude strength by attitude valence and a set of items regarded as corresponding with strength Respondents indicated the extent to which they viewed the Apple iPod as "good" (+5) versus "bad" (–5) and "positive" (+5) versus "negative" (–5) and the extent to which they "liked it" (+5) versus "disliked it" (–5) (α = 73) These items indicate attitude valence[3] Respondents used five additional items to rate the extent to which the Apple iPod is (1) important to them and (2) self-relevant, as well as the extent to which they (3) have thought about the brand, (4) are confident with their brand evaluation, and (5) are certain regarding their brand evaluation (α = 73) These items are commonly used with attitude valence to indicate attitude strength (Krosnick et al 1993)

We assessed brand attitude strength as a single-order factor reflecting the multiplicative product of attitude valence weighted by the confidence/certainty with which this attitude is held[4] The results are unchanged when all five aforementioned items are included All subsequent analyses use only attitude certainty and confidence as indicators because the joint product of attitude valence weighted by confidence and certainty is most consistent with the conceptual definition of brand attitude strength (Briñol and Petty 2009) Notably, the results are similar when we assessed brand attitude strength (1) as the average of the items indicating attitude valence and confidence/certainty or (2) as a two-factor model with valence and confidence/certainty as separate second-order factors

Test of Assumptions

Importance of the two-factor brand attachment model We conducted two confirmatory factor analyses (CFAs) of the items representing attachment, one in which we allowed both the brand–self connection and the prominence factors to correlate (r = 37, $\chi^2(3)$ = 18 37) and one in which we forced them to be perfectly correlated ($\chi^2(4)$ = 223 11) The chi-square change ($\Delta\chi^2(1)$ = 204 74, $p <$ 001) reveals that the first analysis fits the data better, confirming the two-factor attachment model

Evidence for convergent and discriminant validity To verify that brand attachment and brand attitude strength are discriminable constructs, we conducted two CFAs, one in which we allowed both constructs to correlate (r = 66, $\chi^2(3)$ = 3 80) and one in which we forced the two factors to be perfectly correlated ($\chi^2(4)$ = 27 70) The difference between the two models was significant ($\Delta\chi^2(1)$ = 23 90, $p <$ 001), suggesting that brand attachment and brand attitude strength are related but empirically distinct These results also demonstrate that the brand attachment scale meets the criteria of convergent and discriminant validity because it is related to but distinct from brand attitude strength Had attachment been simply a stronger form of attitude strength, we would likely not have observed distinct factors

Separation distress is regarded as an emotional indicator of attachment (Bowlby 1980, Thomson, MacInnis, and Park 2005) That is, the more attached a person is to an entity, the more distress he or she feels at the prospect of losing the relationship with that entity Separation from (loss of proximity to) an attachment object creates emotional distress, inducing negative feelings such as depression, anxiety, and a loss of self Adults reveal distress from attachment figure loss (e g , Berman and Sperling 1994, Simpson 1990), whereas in a consumer context, loss of possessions is also mourned Indeed, Bowlby (1980) regards separation distress as a natural concomitant of attachment As Hazan and Zeifman (1999, p 351) note, "separation distress is the data from which the existence and regulator role of the attachment behavioral system is inferred" Thus, the existence of separation distress is regarded as evidence for the existence of attachment The 1985 "New Coke" fiasco and the death of Michael Jackson illustrate two such examples of the relationship between brand attachment and separation distress

Therefore, the validity of the brand attachment scale would be evidenced by showing a relationship between attachment (and its components) and separation distress We performed a regression analysis to examine whether brand–self connection and prominence as indicators of attachment both independently predict this known indicator of attachment (separation distress) The results reveal two main effects (i e , brand–self connection γ = 50, F(1, 104) = 15 6, $p <$ 001, prominence γ = 63, F(1, 104) = 11 4, $p <$ 001) The interaction was not significant (F(1, 104) = 02) These results strongly suggest that brand–self connection and brand prominence independently contribute to the prediction of separation distress as indicators of brand attachment[5]

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[3] We do not report the results for attitude valence in isolation, because (1) our focus is on attitude strength and (2) attitude strength is more likely to be empirically similar to attachment Thus, focusing on attitude strength provides a more rigorous test of the unique effects of attachment

[4] We converted the 0–10 scale to a 1–11 scale to avoid a statistical bias

Finally, we performed an analysis with a set of models to show that brand attachment is more strongly related to separation distress than brand attitude strength Although consumers with strong brand attitudes are confident in their brand assessments, brand attitude strength is less likely to be strongly related to separation distress than attachment because it does not reflect a strong bond between the brand and the self Thus, evidence for the differential relationship of these constructs to separation distress would provide further evidence that our measure of attachment demonstrates convergent validity because it is more strongly related to a known behavioral indicator of attachment

A set of structural equation models compared brand attachment and brand attitude strength in relation to separation distress A model representing attachment as indicated by brand–self connection and prominence as second-order factors showed that brand attachment is more strongly related to separation distress ($\gamma =$ 98) than brand attitude strength ($\gamma =$ 02, $z =$ 4 39, $p <$ 001, see Figure 1, Panel A) We replicated these results when we represented attachment with a first-order model, with brand–self connection and prominence fixed as a single-order factor ($\gamma =$ 74 versus $\gamma =$ 27) for attachment and brand attitude strength, respectively ($z =$ 3 94, $p <$ 001, see Figure 1, Panel B) In further support of a second-order model of attachment, the fit of the first-order model ($\chi^2(12) =$ 85 00) was not as strong as that of the second-order factor model ($\chi^2(10) =$ 11 50), and the difference in fit between the models was significant ($\Delta\chi^2(2) =$ 73 50, $p <$ 001) This analysis is important because it supports the notion that the two indicators of attachment are best represented as subscales of the higher-order attachment construct Furthermore, a factor analysis shows that our two-factor-based brand attachment measure, brand attitude strength, and separation distress all loaded on separate factors As Table 2 shows, all items loaded significantly on their predicted factors with minimal cross-loadings, suggesting that attachment and attitude strength exhibit discriminant validity These results provide additional evidence that attachment is not simply a stronger form of attachment Had one been a stronger form of another, we would not have observed such discrimination

Discussion

Study 2 supports the assumption that brand–self connection and prominence both contribute to the measurement of brand attachment It also supports a second-order representation of attachment (with brand–self connection and brand prominence as separate indicators), which in turn supports the notion that the two subscales are subsumed within the attachment construct Finally, it supports our conceptualization of attachment and brand attitude strength as related but distinct constructs both from a measurement perspective and in terms of their ability to predict separation distress

Study 3

We designed Study 3 to replicate the results regarding key assumptions of our two-factor-based brand attachment model using a different brand In doing so, we test H_1

Method

Participants and design One hundred forty-one undergraduate marketing students completed a booklet in exchange for partial course credit The booklet included items designed to indicate brand attachment, brand attitude strength, separation distress, and intentions to perform a set of ten behaviors that varied in enactment difficulty The focal brand was Nike shoes We conducted the survey in a group setting

Measures We measured brand attachment, brand attitude strength, and separation distress in a manner identical to Study 2 Respondents again completed two 11-point scale items for each of ten behaviors The first item assessed the perceived difficulty of performing each behavior (0 = "not at all," and 10 = "extremely") The second assessed respondents' intentions to perform the behavior in the future (0 = "not at all," and 10 = "very likely") The ten behaviors were (1) buying Nike shoes, (2) switching from Nike to non-Nike shoes, (3) recommending Nike shoes to other people, (4) buying Nike shoes for friends or family, (5) frequently using products with a Nike logo, (6) paying more for Nike shoes than for non-Nike shoes, (7) defending Nike when others speak poorly about it, (8) waiting for several months to buy Nike shoes rather than buying a non-Nike shoe right now, (9) spending money, time, and energy to participate in activities to promote Nike, and (10) always buying the new model of Nike shoes when it becomes available

Results

Measurement results We conducted two CFAs on the items representing brand attachment, one in which we allowed both the prominence and the brand–self connection factors to correlate ($r =$ 67, $\chi^2(1) =$ 3 84, $p <$ 05) and one in which we forced them to be perfectly correlated ($\chi^2(2) =$ 48 70, $p <$ 001) The chi-square change was significant ($\Delta\chi^2(1) =$ 44 86, $p <$ 001), demonstrating that the first representation fits the data better These results confirm that a

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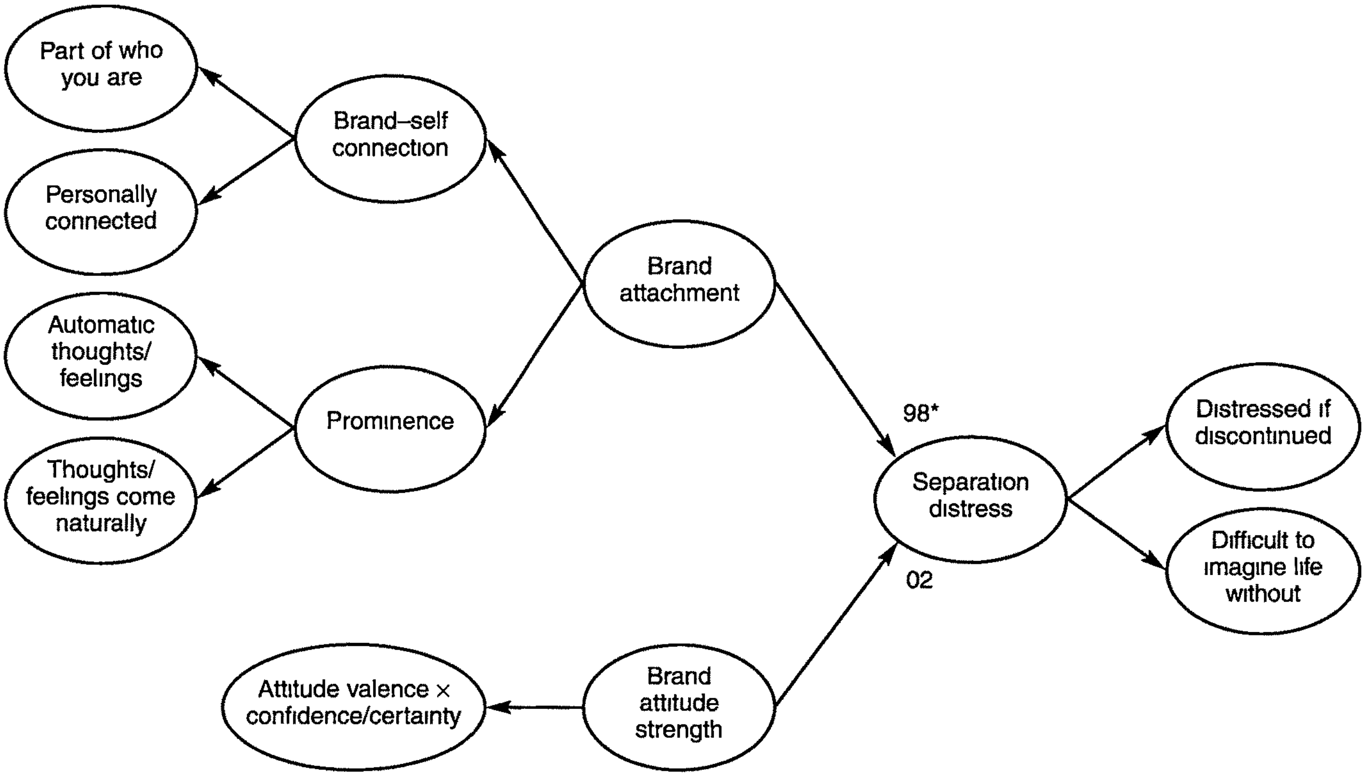
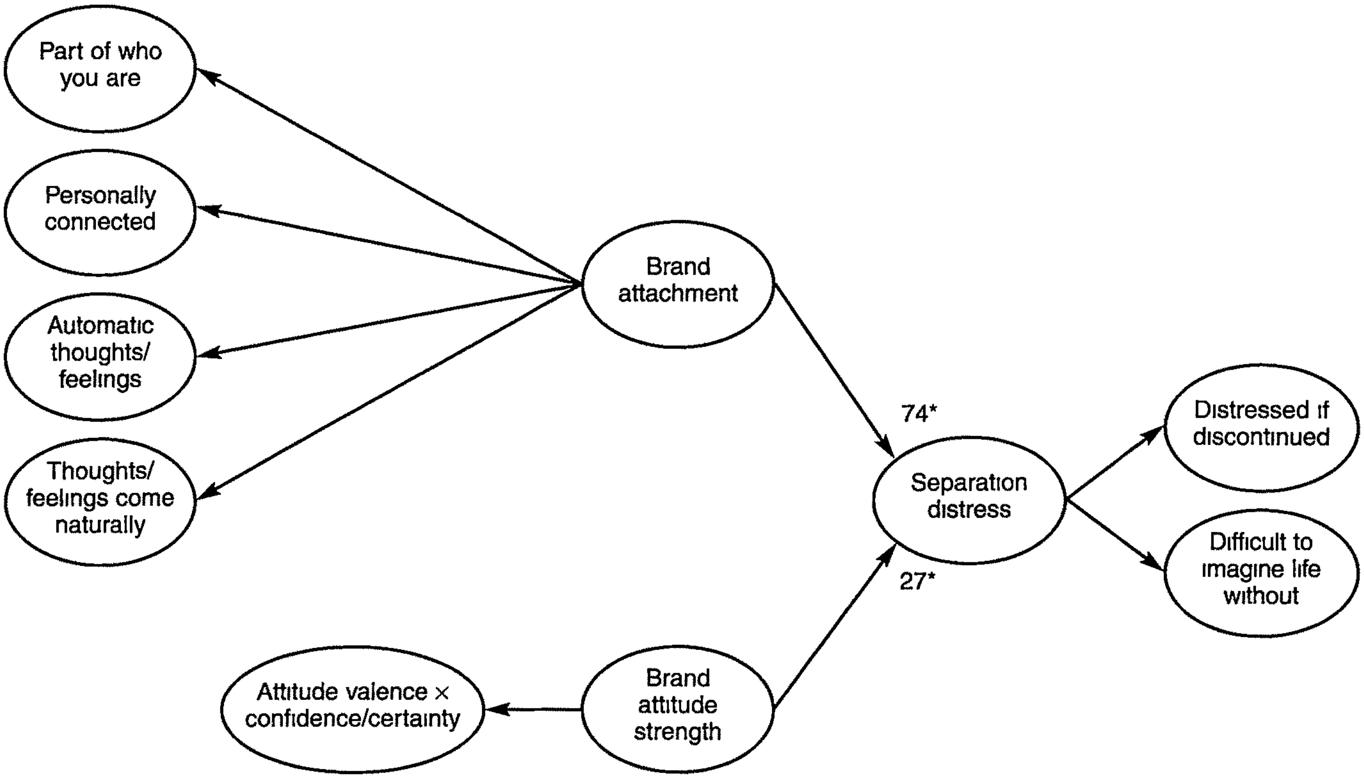
[5] This independence of brand–self connection and prominence is also supported by the unique role of brand prominence We noted previously that when brand–self connection is instrumentality (versus identity) based, brand prominence would add precision in the measurement of attachment To test this idea, we split the data into two groups One group scored high on the "part of me and who I am" and low on "personally connected" indicators of brand–self connection, and the other group scored high on the brand–self connection indicator of "personally connected" and low on "part of me and who I am" As we expected, for the former group, the ability of brand attachment to predict separation distress was equally high regardless of whether attachment included brand–self connection and brand prominence or brand–self connection alone ($\gamma =$ 99 versus $\gamma =$ 91, $ps <$ 001, respectively) However, for the latter group, brand attachment was a better predictor ($p <$ 05) of separation distress when it included both brand–self connection and prominence than brand–self connection alone ($\gamma =$ 99, $p <$ 001 versus $\gamma =$ 61, $p <$ 05, respectively) These results confirm the unique role of brand prominence in measuring brand attachment

FIGURE 1
Study 2: Simultaneous Estimation of Brand Attachment and Brand Attitude Strength on Separation Distress

A: The Second-Order Model


Part of who you are
Personally connected
Automatic thoughts/ feelings
Thoughts/ feelings come naturally
Brand–self connection
Prominence
Brand attachment
98*
Separation distress
02
Distressed if discontinued
Difficult to imagine life without
Attitude valence × confidence/certainty
Brand attitude strength

B: The First-Order Model


Part of who you are
Personally connected
Automatic thoughts/ feelings
Thoughts/ feelings come naturally
Brand attachment
74*
Separation distress
27*
Distressed if discontinued
Difficult to imagine life without
Attitude valence × confidence/certainty
Brand attitude strength

*Significant at $p <$ 05

TABLE 2
Study 2: Factor Analysis of Brand–Self Connection, Prominence, Attitude Strength, and Separation Distress

	Factor Loadings[a]			
Indicators	**Factor 1: Brand–Self Connection**	**Factor 2: Prominence**	**Factor 3: Attitude Strength**	**Factor 4: Separation Distress**
Factor 1 To what extent is iPod part of you and who you are?	99	02	03	05
Factor 1 To what extent do you feel personally connected to the iPod?	85	03	04	12
Factor 2 To what extent are your thoughts and feelings toward iPod often automatic, coming to mind seemingly on their own?	07	97	04	04
Factor 2 To what extent do your thoughts and feelings toward iPod come to you naturally and instantly?	18	78	04	11
Factor 3 Attitude valence multiplied by certainty and confidence	03	00	98	01
Factor 4 To what extent would you be distressed if the iPod was discontinued?	09	11	08	88
Factor 4 To what extent is it difficult to imagine life without the iPod?	13	07	03	88

[a]The percentages of variance explained by the four factors are 63 44%, 14 03%, 8 33%, and 5 23%, respectively, with a total variance explained of 91 03%

two-factor model (represented by brand–self connection and brand prominence) indicates brand attachment better than a one-factor model

We conducted two CFAs, one in which we allowed brand attachment (represented by brand–self connection and prominence) and attitude strength to correlate ($r = 80$, $\chi^2(3) = 5\ 10$, $p > 05$) and one in which we forced the two constructs to be perfectly correlated ($\chi^2(4) = 53\ 40$, $p < 001$) The difference between the two models was significant ($\Delta\chi^2(1) = 48\ 30$, $p < 001$), further supporting the notion that brand attachment and attitude strength are related but empirically distinct constructs The results further demonstrate the convergent and discriminant validity of the brand attachment scale as represented by both prominence and brand–self connection Attachment, as indicated by the two subscales, is related to but empirically distinct from attitude strength [6] We obtained results consistent with those in Study 2 for separation distress (we do not report the results given space constraints)

Test of H_1 To test whether attachment is a better indicator of a consumer's intent to perform difficult behaviors (H_1), we first validated that the behaviors we examined indeed varied in difficulty Respondents' assessments of the perceived difficulty of performing each of the ten measured yielded the following The three most difficult behaviors were "always buying the new model", "spending money, time, and energy to promote Nike", and "waiting to buy Nike versus buying an alternative brand," with difficulty levels of 5 87, 5 65, and 5 39, respectively The second category included the following two behaviors "defending Nike when others speak poorly of it" and "paying more for Nike versus non-Nike shoes," with difficulty scores of 4 93 and 4 44, respectively The third category included five behaviors "buying Nike shoes for others," "using products with a Nike logo," "switching from Nike to non-Nike shoes," "recommending Nike to others," and "buying Nike shoes for oneself," with difficulty levels of 3 80, 3 53, 3 52, 3 51, and 3 21, respectively The three categories representing different levels of the behavior heirarchy were significantly different from one another in their level of difficulty at the 05 level

A model estimating brand attachment and brand attitude strength simultaneously supports H_1 (see Figure 2) Consistent with H_1, brand attachment better predicts intentions to engage in behaviors regarded as most difficult ($\gamma = 81$, $p < 001$) than brand attitude strength ($\gamma = 05$, $p > 05$) The difference between the two coefficients was significant ($z = 3\ 87$, $p < 01$) Brand attachment also better predicts moderately difficult behaviors ($\gamma = 52$, $p < 01$) than brand attitude strength ($\gamma = 47$, $p < 01$) Again, the difference between the γ coefficients is significant ($z = 2\ 91$, $p < 01$) Combined, these results strongly support H_1 Though not hypothesized, we found that brand attitude strength ($\gamma = 46$, $p < 01$) was as strong a predictor as brand attachment ($\gamma = 45$, $p < 01$) of brand behaviors regarded as least difficult to perform ($z = 07$, $p > 05$) We discuss this finding further in the "General Discussion" section

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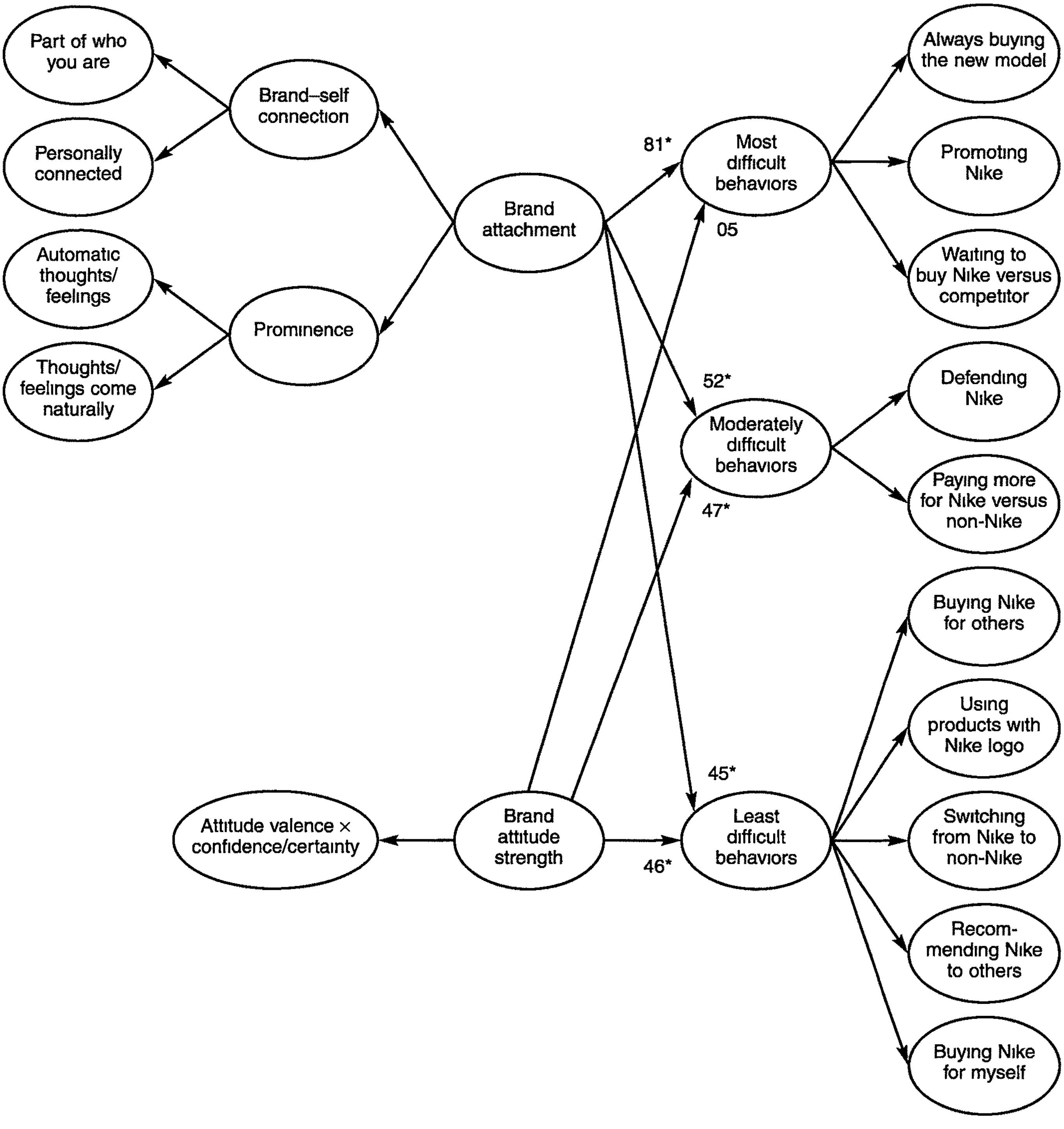
[6]Factor analyses show that all brand–self connection, brand prominence, attitude strength, and separation distress items load cleanly on their hypothesized factors

FIGURE 2
Study 3: Simultaneous Estimation of Brand Attachment and Brand Attitude Strength on Behavioral Intentions


Part of who you are
Personally connected
Automatic thoughts/ feelings
Thoughts/ feelings come naturally
Brand–self connection
Prominence
Brand attachment
Attitude valence × confidence/certainty
Brand attitude strength
81*
05
52*
47*
45*
46*
Most difficult behaviors
Moderately difficult behaviors
Least difficult behaviors
Always buying the new model
Promoting Nike
Waiting to buy Nike versus competitor
Defending Nike
Paying more for Nike versus non-Nike
Buying Nike for others
Using products with Nike logo
Switching from Nike to non-Nike
Recom-mending Nike to others
Buying Nike for myself

*Significant at $p <$ 05

In addition, we compared the predictive power of two attachment models, one with both brand–self connection and brand prominence, as indicators of attachment, and one with only the brand–self connection component This analysis explores whether brand prominence as an indicator of brand attachment is necessary for the prediction of behavioral intentions The results show no significant difference in the one-component (brand–self connection) versus the two-component (brand–self connection and prominence) brand attachment measure's predictive ability of behaviors most difficult to perform ($\gamma =$ 84 and 82, $p <$ 001, respectively), moderately difficult to perform ($\gamma =$ 87 and 82, $p <$ 001, respectively), and least difficult to perform ($\gamma =$ 82 and 77, $p <$ 001, respectively) The difference in coefficients and model fit ($\Delta\chi^2(7) = 10 62$, $\Delta\chi^2(5) = 5 31$, $\Delta\chi^2(11) = 6 90$, $p > 05$, respectively) was not significant This result is noteworthy, and we explore it further in Study 4 and the "General Discussion" section

Discussion

Study 3 replicates the measurement effects we observed in Studies 1 and 2 In addition, and consistent with H_1, the study supports the idea that brand attachment better predicts consumers' intentions to enact difficult behaviors than brand attitude strength These results further confirm the idea that brand attachment and brand attitude strength are different constructs that have different behavioral outcomes Finally, we find that the two- and one-component brand attachment measures predict intent to perform behaviors equally well Because Study 3 relies on intentions to perform behaviors versus the actual performance of such behaviors, Study 4 extends Study 3 by examining the importance of brand–self connection and prominence as indicators of attachment Study 4 also tests the remaining hypotheses using actual purchase data

Study 4

Method

Study 4 involved the collaboration with a large European retail bank listed on the stock exchange The bank serves more than 15 million customers across 17 international markets Because people's investments, and in some cases life savings, are involved, this context is ideal for testing the ability of both constructs to predict difficult behavior

We obtained contact details for 2000 customers who were randomly selected from one of the firm's branch networks Before our quantitative study, we conducted 41 telephone interviews with randomly selected customers Our aim was to discuss the meaning of the items that constituted our measures with customers and reduce item ambiguity A subsequent pretest of the questionnaire with 52 randomly selected customers explicitly asked participants to point out any ambiguity in responding to individual questions We deemed such pretesting to be necessary because the original scale was developed in the United States and tested among U S consumers Use of the scale in Europe necessitated minor wording changes to ensure question clarity

We then mailed a finalized version of the questionnaire with an informative cover letter, a prepaid return envelope, and a thank you note with a small book of commemorative stamps worth $3 as an incentive The cover letter explained the purpose of the study, assured that individual responses would not be shared with anyone outside the research team, and thanked the participant Three weeks after the first mailing, we followed up with a small thank you card for participation and again sent the same questionairre to those who did not respond to the first mailing Our sampling effort generated 701 responses We dropped four questionnaires because of insufficient questionnaire completion The final set of 697 usable responses reflected a 34 85% effective response rate We compared early and late responses, following Armstrong and Overton's (1977) recommended procedure We found no indication of response bias Moreover, a check with a manager from the collaborating firm revealed that the demographic profile of respondents was representative of the firm's customer base

Measures Measures of brand attachment, brand attitude strength, and separation distress were identical to those used in the prior studies

Dependent measures We operationalized actual purchase by collecting purchase data on the individual customer from the collaborating firm We measured actual purchase behavior by summing the sales of all investment products (e g , investment funds) for each individual customer over the most recent six-month period after the survey We operationalized brand purchase share by asking respondents to indicate how many banks (in addition to the collaborating firm) they are currently using for their various financial services (e g , checking account, savings, investments, loans) When respondents indicated that they exclusively use the collaborating firm brand, we noted purchase share as 100% We measured need share by asking respondents to indicate the extent to which they use the collaborating firm for all their financial services Questions included the following "To what extent out of 100% do you use [company name] for all your financial services (savings, investments, loans, etc)? If you use only [company name] for your financial services, you indicate 100% If you use more than one financial service institution, including nonbanking institutions such as investment firms, insurance companies, etc , indicate the percentage of your use of [company name] among all the financial service institutions"

Control variables We also collected data on several control variables To predict changes in actual behavior that are not driven by consumer inertia, we included past purchase, which was collected similarly to our customer purchase behavior measure and accounted for the six months before our survey, as a predictor We also accounted for gender and relationship length Prior research has indicated the role of relationship length as a likely proxy for customer inertia (Colgate and Lang 2001) and the positive effect of gender on brand choice (Meyers-Levy and Sternthal 1991)

Results

The results replicated the previous studies, which tested the assumptions underlying (1) the conceptual properties of brand attachment, (2) the two-factor model and the second-order model of brand attachment, (3) the measure's discriminant and convergent validity in relation to brand attitude strength,[7] and (4) the stronger relationship between attachment and separation distress in relation to attitude strength Given space constraints, we do not report these results

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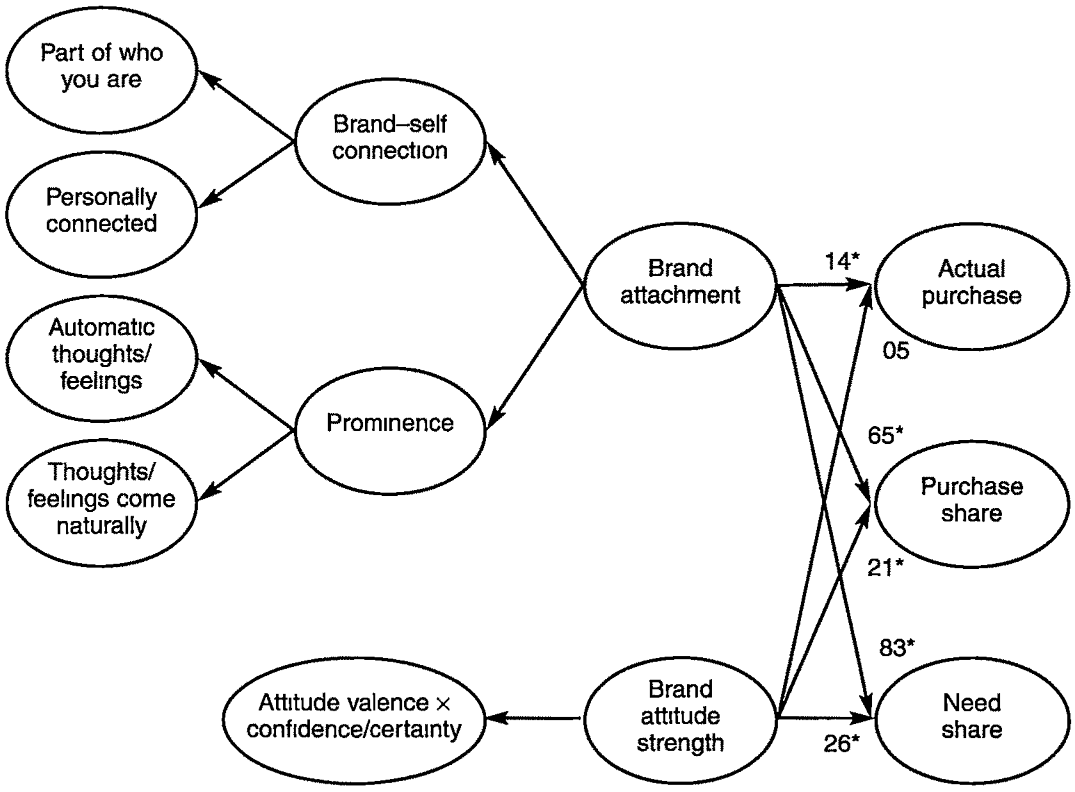
[7] We provide further evidence that brand attachment is not simply strong brand attitude in Study 4, in which we observe that attitude strength and attachment differ in time dependency In Study 4, relationship length does not discriminate between consumers who have strong versus weak attitude strength ($M = 18 29$ and $16 35$, $t(66) = 74$, $p = 46$) In contrast, relationship length is significantly related to attachment Customers with high brand attachment have a longer relationship with the brand than customers whose brand attachment is low ($M = 19 38$ and $14 03$, $t(66) = 2 11$, $p < 05$) This result offers further support that brand attachment and attitude strength behave differently

Test of H_2 actual customer purchase behavior To test whether brand attachment predicts actual customer purchase behavior (sales as reported by the company) better than brand attitude strength, we used a model in which attachment was represented by prominence and brand–self connection as second-order factors The results revealed that brand attachment significantly predicts actual behavior ($\gamma = 14, p < 01$), even after we accounted for past behavior ($\gamma = 60, p < 001$), relationship length ($\gamma = 03, p > 05$), and gender ($\gamma = 02, p > 05$) Brand attitude strength does not predict actual customer behavior ($\gamma = 05, p > 05$) (Figure 3) The difference between the coefficient for attachment and brand attitude strength was significant ($z = 2\ 44, p < 01$) The result that brand attachment is a stronger predictor of actual customer behavior than brand attitude strength is in line with our prediction A set of analyses comparing only brand–self connection with brand–self connection and prominence as indicators of attachment showed that the latter model demonstrated better prediction ($\gamma = 11$ versus $\gamma = 18$, $ps < 001$, respectively, $\Delta\chi^2(8) = 49\ 83, p < 001$) These results suggest that attachment (as represented by both brand–self connection and brand prominence subscales) successfully predicts actual purchase, confirming that both are useful predictors of actual behavior

Test of H_3 brand purchase share We tested whether brand attachment significantly predicts brand purchase share with a model in which attachment was again represented by brand prominence and brand–self connection as second-order factors The results show that brand attachment was a stronger predictor of brand purchase share ($\gamma = 65, p < 001$) than brand attitude strength ($\gamma = 21, p < 001$), even after we accounted for past behavior ($\gamma = 10, p < 05$), relationship length ($\gamma = 05, p > 05$), and gender ($\gamma = 03, p > 05$, Figure 3) The difference between the effects of brand attachment and brand attitude strength was significant ($z = 8\ 86, p < 001$) These results support H_3 Furthermore, we compared the results of two models, one in which we represent attachment by the two-factor measure and one in which we represent attachment by brand–self connection only As we expected, the two-component brand attachment measure predicted brand purchase share significantly better than brand–self connection alone ($\gamma = 64$ versus $\gamma = 20$, $ps < 001$, respectively, $\Delta\chi^2(8) = 56\ 40, p < 001$) These results further underscore the importance of including prominence (with brand–self connection) as a predictor of brand purchase share

Test of H_4 brand need share We tested H_4 by asking respondents to indicate the extent to which they use the collaborating firm for all their finance services, even services that are performed by other institutions (e g , investment firms, insurance companies) Structural equation models

FIGURE 3
Study 4: Simultaneous Estimation of Brand Attachment and Brand Attitude Strength on Actual Customer Behavior



*Significant at $p < 05$

show that attachment represented by both prominence and brand–self connection as second-order factors was a significantly stronger predictor of brand need share ($\gamma =$ 83, $p <$ 001) than strong brand attitudes ($\gamma =$ 26, $p <$ 001, $z =$ 11 86, $p <$ 001) (see Figure 3) Past behavior ($\gamma =$ 02, $p >$ 05), relationship length ($\gamma =$ 03, $p >$ 05), and gender ($\gamma =$ 02, $p >$ 05) had no significant effects These results support H_4 We also compared a model that represented attachment by only brand–self connection with a model in which both brand–self connection and prominence were indicators of attachment Again, we observed that the two-factor brand attachment model predicted brand need share more strongly than brand–self connection alone ($\gamma =$ 82 versus $\gamma =$ 29, $ps <$ 001, respectively, $\Delta\chi^2(8) =$ 49 20, $p <$ 001)

Discussion

The use of real purchase data in Study 4 supports H_2–H_4 and helps us generalize the findings to a context that involves actual customer behavior Study 4 demonstrated that brand–self connection and brand prominence both indicate attachment and that the inclusion of both predicted company reported sales, brand purchase share, and need share more strongly than brand–self connection alone They also outperformed brand attitude strength as predictors of these outcomes We observed these effects even when accounting for alternative factors Taken together, the results of Study 4 corroborate the important role of brand attachment and strongly support the notion that brand attachment and brand attitude strength are different constructs that have different outcomes related to behavior, brand purchase share, and need share

General Discussion

Summary and Implications

The objective of this article was to address the critical but unexplored question whether brand attachment adds value as a construct of interest to marketing and consumer researchers compared with that of brand attitude strength Building on prior work on attachment and the self-expansion theory, this article make three significant contributions The first is a conceptual contribution that articulates the properties of brand attachment and distinguishes this construct from brand attitude strength The second is a measurement contribution We developed a managerially viable scale that taps the indicators of brand attachment We also demonstrate that (1) both the brand–self connection and the prominence dimensions are critical and nonredundant indicators of attachment, (2) the scale is strongly related to a known emotional indicator of attachment, separation distress, in support of the scale's convergent validity, and (3) the brand attachment scale (as represented by brand–self connection and prominence) is empirically related but distinct from brand attitude strength, in support of its convergent and discriminant validity The third is a significant managerial contribution We hypothesize and find that the more strongly consumers are attached to a brand, the more willing they are to forsake personal resources to maintain an ongoing relationship with that brand Thus, they are willing to express an intent to engage in difficult behaviors—those that require investments of time, money, energy, and reputation—to maintain (or deepen) a brand relationship In addition to behavioral intent, we show that attachment represented by both brand–self connection and prominence is a significantly better predictor than brand attitude strength of actual behaviors In terms of brand purchase and need share in particular, managers have much to gain by an effort to build stronger brand attachment

In addition to the managerial implications, the results of the current research offer other important managerial and further research implications Although the brand attitude strength construct may capture a brand's mind share of a consumer, attachment is uniquely positioned to capture both heart and mind share The finding that attachment better predicts actual behavior than brand attitude strength is of significant importance to managers Brand attitude strength does not fully reflect the extent to which a brand has successfully captured a consumer's heart Therefore, when assessing customer–brand relationships, managers should incorporate brand attachment in their brand evaluation matrices Linking attachment with responses to brand attitude measures and actual purchase data will give managers a more detailed picture of how current brand management efforts are related to future sales

Further Research

Although our findings are provocative, they raise additional research issues Given the uniquely strong effects of brand attachment shown here, additional research is needed on how marketers can enhance brand attachment (by fostering brand–self connection and prominence)

In addition to studying brand attachment antecedents, further research might examine the relative impact of brand attachment and brand attitude strength on several metrics of brand equity According to various metrics, a brand's financial value to the firm is typically affected by the brand's (1) unit price (P_t), (2) unit marketing costs (MC_t), and (3) the number of units sold (Q) Close examination of these three components suggests that they are directly tied to and reflect the nature and intensity of customers' attachment to a brand Thus, the stronger the brand attachment, the higher the unit price the brand can bear (willingness to pay a price premium, Thomson, MacInnis, and Park 2005) Strong attachments also induce a devaluation of competing alternatives (Johnson and Rusbult 1989) and result in greater willingness to stay in the relationship (Drigotas and Rusbult 1992) These intentions and behaviors all influence the stability of the Q component and reduce the costs of customer retention Finally, strong attachments toward brands affect brand loyalty and willingness to promote a brand and engender a relative insensitivity to reciprocity by one's partner (e g , active marketing effort by a brand to reinforce or appreciate its customers' loyalty, Thomson, MacInnis, and Park 2005) Such outcomes should affect the Q component and make the MC component more cost efficient Attitude strength may be less strongly related to these brand equity metrics Thus, although prior research suggests that strong brand attitudes can be an important driver of brand equity (which we do not dispute), we propose that there is added value to examining attachment because it may predict brand equity drivers (e g , price, unit marketing costs and the number of units sold) more strongly than do strong brand attitudes

Additional research is also needed to shed light on several results we observed in Studies 3 and 4 One issue is that whereas brand attachment in Study 4 best predicted the results when attachment was indicated by both brand–self connection and prominence, in Study 3, only brand–self connection was necessary Two reasons may underlie these results First, Study 3 predicted intentions, whereas Study 4 predicted actual behaviors Perhaps prominence is unnecessary as an attachment indicator when only intentions (versus behavior) are assessed Second, perhaps for most respondents in Study 3, the brand (Nike) is more identity based than instrumentality based We reason that brand prominence contributes more when attachments are based on the brand's instrumentality in goal achievement However, further research should examine the boundary conditions under which prominence plays a role as a critical indicator of attachment

Another noteworthy result comes from Study 3, which showed that brand attitude strength and attachment are equally good as predictors of easy-to-perform behaviors such as brand switching It is possible that when behaviors are easy to perform, either attachment or strong attitudes predict behavior It is also possible that brand attitude strength better predicts movement away from a brand (e g , switching) than attachment because strong negative attitudes predict brand rejection Attachment may better reflect approach (than avoidance) responses

Further research should also compare the brand attachment measure we developed here with the pictorial measure of the inclusion of another person in the self that Aron, Aron, and Smollan (1992) developed That measure represents closeness in terms of the degree of pictorial overlap between the self (represented as a circle) and another person (represented as a different circle) The greater the overlap in the circles, the closer the person is to the other Applied to brands, we speculate that Aron and colleagues' (2005) measure corresponds closely with the brand–self connection component of attachment and, in particular, with items that reflect the identity overlap (versus instrumentality) of the brand

Research might also examine whether brand attitude strength and brand attachment reflect different stages of a brand relationship, each of which must be managed to strengthen brand equity Indeed, Study 4 provides evidence of such time dependence with brand attachment (see n 7) Perhaps the first stage of brand attachment entails relationship establishment, which develops through brand purchase This stage is best represented by positive brand attitudes Such attitudes may become strong when they are based on thoughtful processing When the brand offers resources in the service of self-expansion, consumers may subsequently develop strong connections between the brand and the self as well as mental models of the brand and the self, from which brand-related thoughts and feelings are easily and frequently accessed At this second stage, strong brand attitudes develop into brand attachments It is perhaps at this point that the positive relationship between self-associations with a brand and brand attitudes converge (Gawronski, Bodenhausen, and Becker 2007, Greenwald et al 2002, Prestwich et al 2010, Tietje and Brunel 2005, Zhang and Chan 2009) The act of choosing an object can result in the creation of associations between the self and the chosen object (Gawronski, Bodenhausen, and Becker 2007, Tietje and Brunel 2005) The brand's prominence and its linkage to the self may influence consumers to invest resources of their own in the service of maintaining a brand relationship Such resources are revealed by brand loyalty, brand defense, and other behaviors that are difficult to perform and require the use of valued resources These behaviors are typical outcomes of brand attachment According to this perspective, attitude strength and brand attachment are not competing constructs Rather, they may represent different stages of a brand–customer relationship Both are critical Whereas brand attachment may represent a more desirable destination for managers than strong brand attitudes, the development of strong brand attitudes may be a relevant and necessary step

Finally, in this article, we emphasize attachment as a positive bond between the consumer and the self Other research suggests that consumers can have strong negative dissociations between the brand and the self Such negative dissociations can results in brand relationships described as enmities (Fournier 1998) and motivations to inflict harm on the brand (as is true with "bad behavior" from sports fans) Further research on these strong aversive brand relationships as the counterpart of strong attachment relationships is necessary

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Jan-Benedict E.M. Steenkamp & Martijn G. de Jong

A Global Investigation into the Constellation of Consumer Attitudes Toward Global and Local Products

In this article, the authors introduce attitude toward global products (AGP) and attitude toward local products (ALP) as generalized attitudinal constructs and address the four issues these constructs raise: (1) How are AGP and ALP related to each other? (2) What is the motivational structure underlying AGP and ALP? (3) Is the proposed theory culturally circumscribed, or does it generalize across countries? and (4) What are the managerially relevant implications of these consumer attitudes? To answer these questions, the authors propose and empirically test an integrated structure for AGP and ALP and their antecedents, organized around the powerful motivational concept of values. They test their theory using a unique data set involving 13,000 respondents from 28 countries in the Americas, Asia, and Europe, thus allowing for a global investigation of a global issue. The study findings provide managers with strategic direction on how to market their products in a globalized world.

Keywords: global products, local products, global marketing, consumer culture, values

The globalization of the marketplace is one of the pivotal developments facing companies around the world. Developments accelerating the trend toward global market integration include worldwide investment and production strategies, standardization of manufacturing techniques, emergence of global media and the Internet, growing urbanization, rapid increase in education and literacy levels, and expansion of world travel and migration (Ritzer 2007; Yip 2003).

Consistent with current trends in globalization, many international companies have moved from the traditional multidomestic approach, in which local subsidiaries market locally developed products to the local population, to a global approach, in which firms market their products on a global basis with only limited adaptation to local markets (Kotabe and Helsen 2010). For example, Procter & Gamble and Unilever have greatly pruned their number of local products while putting their money behind products with global potential (Schuiling and Kapferer 2004).

An important question involves whether the move toward global products is consistent with market demands. Many global researchers believe this is not the case. They posit a basic trade-off between adaptation (local responsiveness) and aggregation (economies of scale). Ghemawat (2007, p. 198, emphasis in original) calls this "*the* strategic choice on which the literature on global strategy has traditionally focused." According to Ghemawat, firms can gain competitive advantage either by achieving local relevance through a focus on local products or by achieving economies of scale and scope through international standardization of global products. In a similar vein, Kotabe and Helsen (2010) argue that global products are motivated by a product orientation, or the lowering of costs through mass production. In contrast, local products are inspired by a market-driven mind-set, or the increase of consumer satisfaction by offering local products that match local needs. This position also appears in most international textbooks.

Other authors question the existence of the basic trade-off between local relevance and global efficiency. Levitt (1983) argues that consumers around the world prefer the (alleged) superior quality and reliability that global products offer. Yip (2003, p. 95) notes that "in many situations standardization can actually increase preference." Consistent with this notion, Steenkamp, Batra, and Alden (2003) find that consumers' preferences for globally branded products are positively related to the degree to which they believe that these products are sold around the world rather than being available only on a local basis. Consumers often equate consumption of global products with modernity, progress, consumerism, efficiency, and a promise of abundance (Holton 2000). To complicate the issue further, evidence also exists that consumers may combine a strong preference for global products with an equally strong preference for local products (Strizhakova, Coulter, and Price 2008). Finally, there is growing support that consumers can reject both local and global products altogether, viewing them as conduits through which companies attempt to hook

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them into the superficial consumption of commoditized products (Arnett 2002)

Given the central role of product policy in firm strategy, this lack of guidance in the marketing literature is problematic One solution, originally proposed in Keegan's (1969) classic article, would be to simply acknowledge that consumer acceptance of global versus local products depends on the specific product-market–company mix Although in the extreme this may be true, it offers little guidance to international companies Instead, we postulate a common thread that underlies an individual consumer's response to global and local products across the broad range of product categories We posit that consumers vary systematically and predictably in their attitudes toward global products (AGP) and in their attitudes toward local products (ALP) Consumers differ systematically on AGP and ALP in that these attitudes are not just specific to a particular product but rather are generalized attitudes across a wide variety of product categories Furthermore, we propose that consumers differ predictably on AGP and ALP in that these attitudes are not merely stochastic entities but rather can be understood by people's underlying motivational structure

Our position on AGP and ALP raises several important issues First, how are AGP and ALP related to each other? Are they polar opposites? If not, how can they be combined to explain such seemingly different responses by consumers to global and local products? Second, what is the motivational structure purportedly underlying AGP and ALP? Third, is our theory culturally circumscribed, or does our theory generalize across countries? Most theories are based on the U S context (Steenkamp 2005) Global generalizability is especially important in our context because, by definition, global products are marketed in countries around the world Finally, what are the managerially relevant implications of these consumer attitudes?

The contributions of this article are to introduce AGP and ALP as generalized attitudinal constructs and to address the four issues they raise To achieve this, we propose and empirically test an integrated structure for AGP and ALP and their antecedents, organized around the powerful motivational concept of values (Rokeach 1973, Schwartz 1992) We test our theory using a unique data set involving 13,000 respondents from 28 countries in the Americas, Asia, and Europe The study findings provide managers with strategic direction how to market their products in a globalized world

Attitudes Toward Global and Local Products

Understanding AGP and ALP in the Context of Consumer Culture

An attitude "is a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (Eagly and Chaiken 1998, p 269) In our study, the entities of interest are global and local products Consistent with the consumer culture literature, in this article, "products" refer to everything that can be consumed, including tangible products, services, brands, lifestyles, and symbols (Holt 1998, Tomlinson 1999) Local products are tailored for local markets and are marketed and distributed only in the consumer's home country, and global products are tailored for global markets and marketed and distributed in many countries around the world (Strizhakova, Coulter, and Price 2008) To understand why consumers have generalized attitudes toward global and local products, we turn to the consumer culture literature (Arnould and Thompson 2005, Slater 1997)

The central notion of consumer culture is that in a modern world, core identities are defined and oriented in relation to consumption (Holt 2002) Indeed, consumer culture has been called "a culture *of* consumption" (Slater 1997, p 8, emphasis in original) People embracing consumer culture attempt to add meaning to their lives, to make sense of their environments, and to orient their own experiences and lives through consumption of products as broadly conceived (Tomlinson 1999) It is widely recognized that the interpenetration of local cultures and the cultural forces associated with the globalization of the marketplace heavily influence contemporary consumer culture (Appadurai 1996, Ritzer 2004, 2007) Indeed, Tomlinson (1999, p 190) calls "localism" and "globalism" the "two axial principles of our age"

Traditionally, the dominant consumer culture was the culture of one's home country, called the local consumer culture (LCC) Even today, LCC remains a strong force in the lives of most people around the world (Crane 2002) People who embrace LCC attempt to add meaning to their lives through the consumption of locally conceived products Across a wide range of consumption categories, they value the products that are indigenously conceived and controlled and products that are comparatively rich in distinctive local content Moreover, globalization of world markets has led to renewed appreciation for LCC among some consumers who oppose the "bland homogeneity" of the same (Western-conceived) products, services, symbols, and artifacts everywhere (Steger 2003) Considering the key role of consumption of products in consumer culture, it stands to reason that consumers who embrace LCC have a more positive ALP in general Conversely, there are consumers who believe that products imbued with local cultural content have lost much of their relevance in an era of worldwide diffusion of practices, expansion of relations across continents, organization of social and cultural life on a global scale, and the growth of a shared global consciousness (Ritzer 2007, p 4) These consumers will have a more negative ALP

In recent decades, globalization processes have given rise to a new cultural force, the global consumer culture (GCC) (Ritzer 2007) Global consumer culture is closely linked to people's belief in global citizenship and the desire to participate in the "global village" (Strizhakova, Coulter, and Price 2008) People attempt to find meaning in their lives as consumers through the consumption of products that are generally recognized as international and transcending individual national cultures They are attracted to the "shared consciousness" and the cultural meanings produced by globalization (Holton 2000) They appreciate the increased homogenization of consumer culture around a common set of traits and practices, associated with the worldwide spread of the market economy and the global strategies of international companies (Alden, Steenkamp, and Batra 1999) Conversely, other consumers may reject the (alleged) "emptiness" of deterritorialized, global products They are turned off by the perceived homogenized production of meanings and symbols that are often centrally conceived, controlled, and comparatively devoid of distinctive substantive content (Ritzer 2007, p 36) In summary, we expect people to have a more positive generalized AGP to the extent that they embrace GCC, in which global products are firmly embedded

Companies seem to realize the importance of GCC and LCC to consumers and use cultural positioning in their marketing strategies Across seven developed and emerging countries, Alden, Steenkamp, and Batra (1999) find that 81% of advertisements used either an LCC positioning strategy (59%) or a GCC positioning strategy (22%)

Combining AGP and ALP

Consumer culture theory provides a theoretical foundation for our proposition that consumers hold attitudes toward global and local products that generalize across product domains How are AGP and ALP related to each other? The preceding discussion might suggest that they exist as attitudinal polarities in the sense that a positive attitude toward the one goes together with a negative attitude toward the other (Alden, Steenkamp, and Batra 2006) Indeed, significant numbers of consumers fit into this unipolar pattern Some consumers substitute globally diffused products for those from their traditional LCCs We refer to this attitudinal response as "homogenization" (Holton 2000) The homogenization thesis is built around the utilitarian convenience of global products and their association with dreams, success, and global citizenship evoked through global mediascapes and marketing strategies (Alden, Steenkamp, and Batra 1999) Homogenization is informed by the idea that large numbers of people around the world are substituting globally diffused products for local products from their traditional LCC, leading to a world that is growing increasingly similar

Other consumers combine a negative AGP with a positive ALP This combination of attitudes can be labeled "localization" These consumers prefer local consumption options because they prefer greater (perceived) authenticity, which derives from their central role as carriers of LCC (Thompson and Arsel 2004) They may also more easily identify with local than with global lifestyles, attitudes, and behaviors (Alden, Steenkamp, and Batra 2006) Furthermore, a localization response can be motivated by rejection of globalization trends in general Such a response is reactive in nature, creating boundaries against the outside, exemplified by (homogeneous) global products, which are viewed as hegemonic and alien (Holton 2000) There are also consumers for whom a focus on local products is part of their self-preserving strategy to survive in a rapidly changing world in which old certainties seem to crumble and new cultural influences are feared or outright rejected (Ritzer 2007)

However, various globalization theorists have insisted that the polarity thesis is simplistic, if not outright wrong, in that significant groups of consumers combine a positive (negative) AGP with a positive (negative) ALP Ritzer (2004, p 163) maintains that "rather than either one overwhelming the other, the global and the local interpenetrate, producing unique outcomes in each location" The complex interaction of the local and the global gives rise to "glocal" identities of many modern consumers (Strizhakova, Coulter, and Price 2008) Glocal consumers desire to creatively combine both local and global products in their consumption repertoire For example, Kinra (2006) finds that Indian consumers exhibit high favoritism for local brands, though their preferences for global brands are equally positive and strong

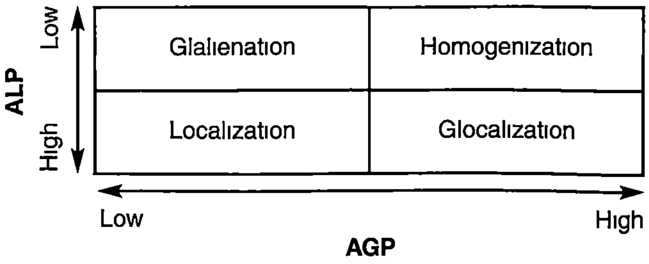
Finally, some consumers combine a negative AGP with a negative ALP They have become alienated from contemporary consumer culture, with its "shallow" emphasis on consumption of increasingly commoditized products, whether they are globally or locally conceived (Slater 1997)—a state we refer to as "glalienation" Rapid changes in consumer culture may result in "an acute sense of alienation" and impermanence as people experience a lack of cultural certainty, or an absence of clear guidelines for how life is to be lived and how to interpret their experience (Arnett 2002, p 778) The apparent success of global products around the world may undermine consumers' beliefs in the value of local product alternatives If, at the same time, these consumers have trouble finding meaning in consumption of globally conceived products, alienation to consumer culture per se may occur (Arnett 2002)

In summary, we posit that ALP and AGP are conceptually independent because negative or positive AGP can coexist with negative or positive ALP By combining the "axial principles of localism and globalism" (Tomlinson 1999), we obtain the fully crossed attitude structure (see Figure 1) Note that the crossed attitude structure in Figure 1 does not imply that ALP and AGP are ecologically uncorrelated Rather, in contrast to the unipolar thesis, we posit that there is discriminant validity between the two constructs

A Values-Based Framework of Antecedents of AGP and ALP

Why do different consumers hold such varied generalized attitudes toward global and local products? To address this question, we propose a key role for the powerful motiva-

FIGURE 1
Combinations of Consumer Attitudes Toward Global and Local Products



ALP \ AGP	Low	High
Low	Glalienation	Homogenization
High	Localization	Glocalization

tional concept of values Values are cognitive beliefs about desirable goals and modes of conduct to promote these goals, which vary in importance, and serve as standards to guide attitudes and behavior (Schwartz 1992) As with attitudes, values can vary in level of abstractness, depending on the entity being evaluated (Ajzen 2001) The difference between values and attitudes is not in terms of broadness or content of the construct but rather in their role in the psychological functioning of individuals Values serve as goal-setting, guiding principles in people's lives that vary in importance and are central to self-identity, and attitudes are evaluative responses of some degree of favorability or unfavorability, which directly influence specific behaviors (Eagly and Chaiken 1998, Verplanken and Holland 2002)[1]

We take a values-based approach to understanding AGP and ALP for five reasons First, and most important, because of their centrality to a person's cognitive structure, it is widely recognized that values provide a powerful theoretical basis for understanding attitudes (Ajzen 2001, Batra, Homer, and Kahle 2001, Burgess 1992, Homer and Kahle 1988, Van Raaij and Verhallen 1994, Verplanken and Holland 2002) According to Rokeach (1973, p 122), the relatively small number of values "is conceived to underlie many if not all social attitudes, moreover, a given value is conceived to determine several or many attitudes and a given attitude to be determined by several or many values" The values–attitudes hierarchy can be understood in terms of social adaptation theory (Homer and Kahle 1988) According to this theory, both values and attitudes are adaptation abstractions that emerge from the processing of information to promote interchanges with the environment favorable to the preservation of optimal functioning (Kahle 1983) As Homer and Kahle (1988, p 638) argue, "because values are the most abstract of the social cognitions, they reflect the most basic characteristics of adaptation These abstractions serve as prototypes from which attitudes are manufactured"

Second, the goal-setting function of values is particularly important in the context of AGP and ALP After all, a central tenet of consumer culture theory, which provides the theoretical foundation for the existence of AGP and ALP, is that people regard consumption of products as an important and valuable goal in its own right (Bauman 1997, Ritzer 2007, pp 163–69) Third, values provide a unifying conceptual framework because they can be conceptualized at different levels of abstraction (Hofstede 2001, Vinson, Scott, and Lamont 1977) This allows for a fine-grained but conceptually integrated understanding of antecedents of AGP and ALP

Fourth, the structure and content of (especially) national-cultural and general values has been thoroughly elucidated and empirically tested in many countries around the world (e g , Schwartz 1992, Vinken, Soeters, and Ester 2004) Globally validated theories are needed to understand global and local attitudes in a global context (Steenkamp 2005) Fifth, values tend to be highly stable over time (Burgess 1992, Schwartz 1992), which increases their usefulness as theoretical explanation and for managerial purposes

In our conceptual framework, we distinguish among three levels of values national cultural, general, and consumer domain specific (for an overview, see Table 1) Schwartz (1994) and Smith and Schwartz (1997) elaborate on the distinction between individual-level values and aggregate national-cultural values (see also Bearden Money, and Nevins 2006, Hofstede 2001) According to Schwartz (1994, p 92) individual-level values "reflect the psychological dynamics of conflict and compatibility that people experience in the course of pursuing their different values in everyday life," and national-cultural values "reflect the different solutions that societies evolve to the problems of regulating human activities [and] the different ways that institutional emphases and investments are patterned and justified in one culture compared with another"

Consumer researchers have proposed the further distinction between general values and consumer domain-specific values (Homer and Kahle 1988, Van Raaij and Verhallen

TABLE 1
Organization of Value Systems in Three Levels

Level of Values	Abstractness	Definition	Exemplary Values
National-cultural values	Highest	Collectively held beliefs that are generally shared among people living in the same country about abstract goals and modes of conduct that transcend specific situations and behavioral domains	Survival, self-expression (Inglehart and Baker 2000)
General values	↓	Individually held beliefs about abstract goals and modes of conduct that promote these goals that transcend specific situations and behavioral domains	Power, universalism, security (Schwartz 1992)
Consumer domain-specific values	Lowest	Individually held beliefs about concrete goals and modes of conduct that promote these goals in the consumer domain	Materialism (Richins and Dawson 1992), environmentalism (Grunert and Juhl 1995)

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[1] Hofstede (1998, p 479) succinctly illustrates the difference between values and attitudes with an example The question "How happy are you with your career opportunities?" is an attitude question, and "How important is it to you to have career opportunities?" is a value question

1994, Vinson, Scott, and Lamont 1977) General values are centrally held and enduring beliefs that guide actions and judgments across the wide range of human domains In contrast, consumer domain-specific values reflect the notion that people acquire more narrowly circumscribed values through experiences in specific domains of consumer activity and that these consumer domain-specific values are needed to fully understand and explain consumer attitudes and behavior (Vinson, Scott, and Lamont 1977, p 45)

In Figure 2, we present our conceptual framework, including the specific values we consider for each value level In the next section, we develop our expectations about the expected effect of these specific national-cultural, general, and consumer domain-specific values on AGP and ALP Given the dearth of previous evidence, we refrain from formulating formal hypotheses, but we summarize our predictions at the end of the next section In our discussion, we focus on main effects Some research in other contexts suggests that the effect of individual-level drivers varies systematically across national cultures (e g , Steenkamp and Geyskens 2006, Steenkamp, Ter Hofstede, and Wedel 1999), though other studies find little evidence for such cross-level interactions (e g , Tellis, Prabhu, and Chandy 2009) We test for the presence of cross-level interactions in our empirical study

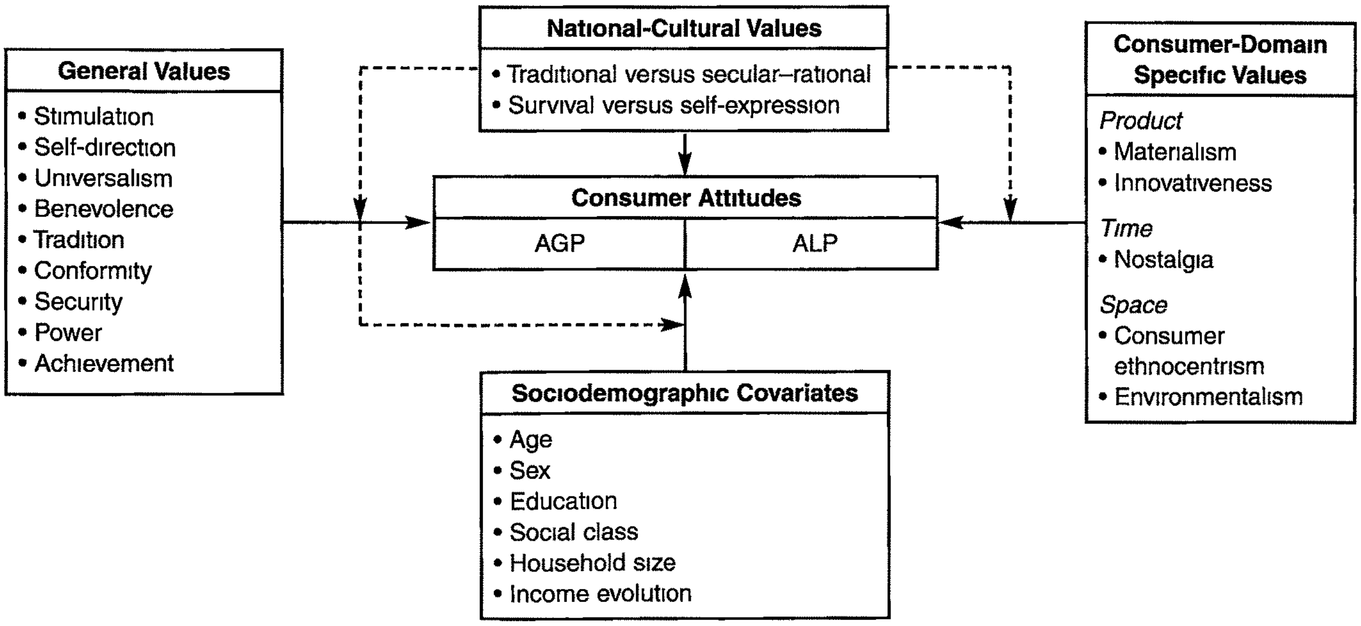
Effects of Values on AGP and ALP

National-Cultural Values

National-cultural values are the most abstract Smith and Schwartz (1997) argue that the shared value emphases in a country help shape the reward contingencies to which people must adapt in the institutions in which they spend most of their time (e g , families, schools, businesses) As a result, the members of each nation share many value-relevant social experiences, and they come to accept similar values In the words of Inglehart and Baker (2000, p 37), "Despite the globalization, the nation remains a key unit of shared experience, and its educational and cultural institutions shape the values of almost everyone in that society" Some countries may be, on average, higher in AGP or ALP than other countries because of systematic differences in their national-cultural value priorities

The best-known national-cultural values systems include the frameworks that Hofstede, Inglehart, Schwartz, and Triandis propose (for an overview and comparison, see Vinken, Soeters, and Ester 2004) For our purposes, Inglehart's framework (see Inglehart and Baker 2000, Inglehart and Welzel 2005) is especially useful because it is grounded in materialism and modernization theory These two concepts occupy a central position in both consumer culture theory and globalization theory (Arnould and Thompson 2005, Slater 1997) Inglehart identifies four clusters of national-cultural values, which are organized in two bipolar dimensions traditional versus secular–rational values and survival versus self-expression values Countries low on the traditional/secular–rational dimension ("traditional" societies) emphasize the importance of deference to authority, along with absolute standards and traditional family values These societies have high levels of national pride and take protectionist and nationalist attitudes Secular–rational societies' values have the opposite preferences on all these topics Traditional societies' nationalism and protectionism are

FIGURE 2
Values-Based Framework of Antecedents of AGP and ALP



Notes The dotted arrows refer to relationships that are estimated but not hypothesized The direct effect of national-cultural values on AGP and ALP refers to the role of national culture in explaining differences in aggregate country scores on AGP and ALP The moderating effects refer to differences in the magnitude of the within-country effect of specific antecedent across countries closely aligned with a focus on the local element in the consumer culture Consequently, we expect that traditional countries are, on average, higher on ALP and that secular–rational countries are higher on AGP

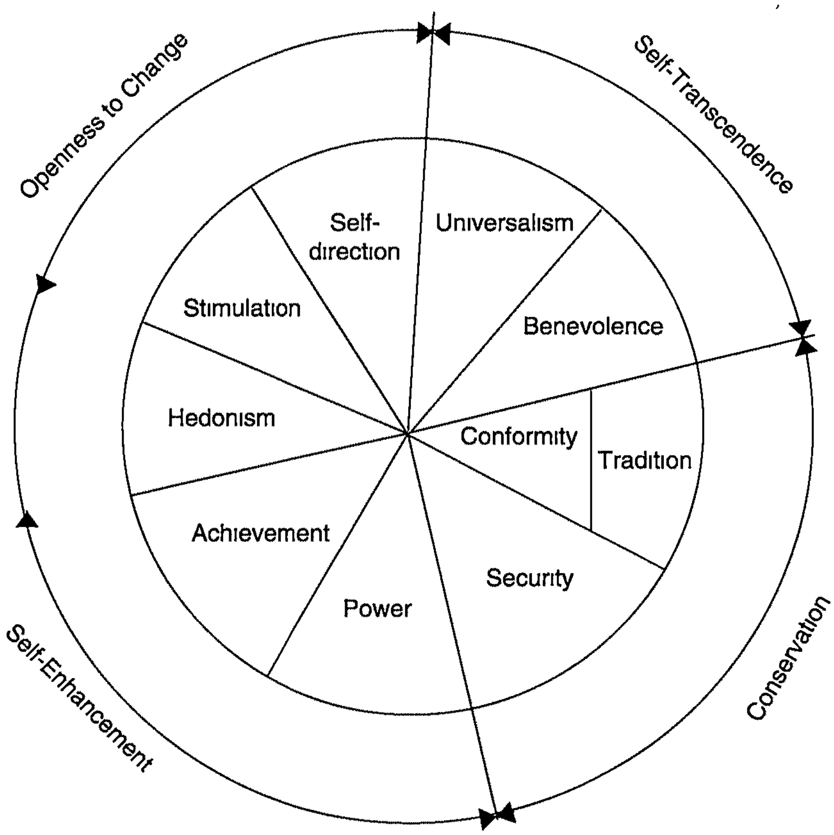
Countries low on the survival/self-expression dimension ("survival" societies) emphasize economic and physical security There are strong economic, cognitive, and social constraints on individual choice and autonomy The opposite applies to countries high on self-expression ("self-expression" societies) In these societies, economic security is less of an issue, and individual autonomy is high The contrast between materialist and postmaterialist values is a key component of the survival/self-expression dimension (Inglehart and Welzel 2005) This pits values such as security, affluence, and economic well-being against values such as subjective well-being, quality of life, and protection of the environment In self-expression societies, "the 'quality of experience' replaces the quantity of commodities as the prime criterion for making a good living" (Inglehart and Welzel 2005, p 25) Consequently, we expect that countries high on self-expression have a more negative attitude toward consumption of products as a way to bring meaning to life Thus, we expect that countries high on self-expression exhibit, on average, more negative attitudes toward ALP *and* AGP

General Values

General values are powerful, individually held, motivational regulators of specific consumer attitudes (Burgess 1992, Smith and Schwartz 1997, Steenkamp, Ter Hofstede, and Wedel 1999) The content and structure of human values has been most thoroughly elucidated in the work of Schwartz (1992) He derives a universal typology of the different contents of general values consisting of ten motivationally distinct types of values These ten value types can be arranged in a circular order around the perimeter of a circle universalism, benevolence, conformity, tradition, security, power, achievement, hedonism, stimulation, and self-direction, in turn, these are organized into four higher-order value domains (for a graphical representation of Schwartz's circumplex model, see Figure 3) The circular structure captures the notion that the pursuit of different value types can be compatible or in conflict, depending on how close the value types are Conflict increases in proportion to the distance between value types, with value types in opposing positions from the center of the structure being in greatest competition (for definitions and examples, see Table 2)

According to Schwartz's (1992) theory, associations of any external variable, such as AGP or ALP, should decrease monotonically when going around the circular structure of value types in both directions from the most positively asso-

FIGURE 3
Schwartz's Model of Relations Among General Values and Higher-Order Value Domains



Source Adapted from Schwartz (1992)

TABLE 2
Value Types in Schwartz's Value Theory

Value Type	Definition	Exemplary Values
Power	Social status and prestige, control or dominance over people and resources	Social power, authority, wealth
Achievement	Personal success through demonstrating competence according to social standards	Successful, capable, ambitious
Hedonism	Pleasure and sensuous gratification for oneself	Pleasure, enjoying life
Stimulation	Excitement, novelty, and challenge in life	Daring, varied life, an exciting life
Self-direction	Independent thought and action-choosing, creating, exploring	Creativity, curious, freedom
Universalism	Understanding, appreciation, tolerance, and protection for the welfare of all people and nature	Broadminded, social justice, equality, protecting the environment
Benevolence	Preservation and enhancement of the welfare of people with whom one is in frequent personal contact	Helpful, honest, forgiving
Tradition	Respect, commitment, and acceptance of the customs and ideas that culture or religion provide	Humble, devout, accepting my portion in life
Conformity	Restraints of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms	Politeness, obedient, honoring one's parents or elders
Security	Safety, harmony, and stability of society, of relationships, and of self	Social order, clean

Source Excerpted from Schwartz (1992)

ciated value type to the most negatively associated value type This pattern of monotonically decreasing and, subsequently, monotonically increasing associations creates a sinusoid curve of associations from most positive to most negative, and back The ALP construct fits into this sinusoid pattern of relationships It seems to be most compatible with tradition and security, and possibly conformity, if we recognize that LCC from which ALPs derive is the "norm" in most countries around the world (Crane 2002) Conversely, consumers who value change, new experiences, and independence (stimulation and self-direction values) are likely to be less attracted to local products because they are well-established and may be perceived as old-fashioned

As a key element of the recent trend toward globalization, global products imply change from the (local) consumption status quo As such, global products are likely to appeal to consumers who value stimulation, while they are likely to be rejected by people who value the status quo However, relationships between AGP and general values may be more complex than relationships between ALP and general values This is due to the complexity of GCC as possessing two contrasting aspects (Tomlinson 1999) On the one hand, as Tomlinson (1999, p 77) notes, there are manifest attractions of creating "'one-world' in the interests of peace of the recognition of our 'common humanity'", on the other hand, Tomlinson highlights the association of GCC with hegemony and power If this Janus-faced conceptualization of GCC is true, we would expect AGP to be positively related to both universalism and power values Although this is inconsistent with Schwartz's (1992) straightforward sinusoid pattern, it highlights the complexities and contradictions inherent in AGP

Consumer Domain-Specific Values

We classify consumer domain-specific values (consumer values) into three categories by recognizing that consumer culture deals with the consumption of products, across time, and across (social and physical) space (Tomlinson 1999) (Giddens [1990, p 64] also talks about "how social life is ordered across time and space") We use the products–time–space framework to identify and structure several consumer values that are theoretically relevant for understanding AGP and ALP More specifically, we consider materialism, innovativeness, nostalgia, ethnocentrism, and environmentalism The first two consumer values are related primarily to products, nostalgia to the time perspective, and ethnocentrism and environmentalism to the (social and physical) context

Although we cannot claim that this set of consumer values is exhaustive, they are among the more important consumer values to study as antecedents of AGP and ALP The consumption of products is a defining feature of consumer culture (Arnould and Thompson 2005), and this should resonate with consumers who value materialism (Richins and Dawson 1992) Furthermore, new products play a key role in moving consumption to an ever higher level (Ritzer 2007) Thus, the extent to which consumers value new products (innovativeness) is closely related to the core of consumer culture Consumer culture is highly dynamic and subject to change (Slater 1997) People's tendency to be forward looking versus living in the past (nostalgia) is important to understand how they respond to and keep up with this dynamism The tension between locally conceived and globally conceived products is paralleled in the sociological notion of in-group versus out-group social space, which is strongly felt among people who are high on ethnocentrism (Shimp and Sharma 1987) Finally, critical theorists have frequently criticized consumer culture—with its focus on consumption—for its impact on the physical space, namely, the environment (e g , Held et al 1999) Such criticism is likely to resonate especially among consumers who are high on environmentalism

Materialism. A distinguishing feature of consumer culture is the idea that prodigious consumption is a measure of success in life (Bauman 1997). This notion is reflected in the construct of materialism, which refers to a centrally held belief about the importance of material possessions in a person's life (Richins and Dawson 1992, p. 308). People who value materialism believe that owning many, and preferably expensive, material objects is an important goal in life. Work by critical theorists such as Holton (2000) and Ritzer (2007) suggests that materialism is especially implicated in consumption of global products, given GCC's emphasis on selling dreams of affluence, personal success, and self-gratification.

Consumer innovativeness. Consumer innovativeness refers to the importance people attach to buying new products at an early stage rather than remaining with previous choices and consumption patterns (Steenkamp, Ter Hofstede, and Wedel 1999). Innovative consumers seek to fulfill their need for change through new consumption experiences (Steenkamp and Gielens 2003). Global products stand for modernity and progress, and their consumption is a new phenomenon that is undergoing rapid change. These qualities are likely to appeal to innovative consumers.[2]

Nostalgia. Nostalgia refers to a need to go back to the past, when things were presumably better (Holbrook 1993). Nostalgic people have difficulty accepting the present—let alone the future—as being equally good if not better than the past. In the past, a person's consumption environment was local, while the present and the future involve global products to an ever-greater degree. To complicate things, nostalgic people may not encounter the idealized past in today's local-product offering because local companies adapt their product portfolio to the growing threat of global products (Kotabe and Helsen 2010). Thus, nostalgic consumers may experience "an acute sense of alienation" as they experience a lack of cultural certainty, or an absence of clear guidelines for how life is to be lived and how to interpret their experience (Arnett 2002, p. 778).

Consumer ethnocentrism. Ethnocentrism represents a centrally held belief that a person's own group is the norm of things and that his or her behavior should be focused on maintenance of the in-group. Ethnocentric consumers believe that purchasing foreign products is wrong because it hurts the economy and leads to loss of jobs. They cherish their own culture, symbols, and products, while they disparage other cultures, even going so far as to hold them in contempt (Shimp and Sharma 1987). Conversely, people low on consumer ethnocentrism tend to be more cosmopolitan and outward looking.

Environmentalism. Environmentalism has emerged as a topic of vital concern to consumers and society (Grunert and Juhl 1995; The World Bank 2003). The relationships between environmentalism and AGP and ALP are far from clear though. It could be argued that people who attach great importance to the environment reject consumption in general because of its (perceived) polluting effects. However, such strident environmentalism may be relatively rare. An argument can be made for what Tomlinson (1999, p. 182) calls "environmental 'localist' fundamentalism" and the local ethics of "nimbyism," which refers to "concern for one's immediate environment and indifference towards others." This suggests that a positive ALP and environmentalism may go together. To complicate things further, environmentalism has strong overtones of universalism, and there is widespread awareness that "our common humanity shares our common environment" (Tomlinson 1999, p. 77). Indeed, the focus on the global and the local may not even be mutually exclusive, as encapsulated by the famous maxim of the environmental movement: "Think globally, act locally" (Tomlinson 1999, p. 183).

Sociodemographic Covariates

In our framework, we also include sociodemographics as covariates. Although such variables are theoretically less "rich" than values, they are managerially actionable (e.g., for market segmentation). Sociodemographics are usually of minor importance in explaining consumer phenomena, but ethnographic studies provide some initial evidence that they may play a more prominent role in AGP and ALP. For example, Kjeldgaard and Askegaard (2006) document glocalization practices among the youth segment, and Holt (1998) highlights the role of people's class-based, sociocultural resources to negotiate global meanings and practices in their daily lives.

However, to date, no large-scale, quantitative research exists on the sociodemographic profile of AGP and ALP. Are there sociodemographic segments that hold positive attitudes toward both global and local products or segments that are negatively disposed toward products, whether they be imbued with global or local cultural content? To answer these questions, we incorporate a wide range of sociodemographics—age, sex, education, social class, household size, and income change—to make maximum use of our extensive database to derive generalizable empirical insights, if any. Table 3 summarizes our predictions. We now turn to an empirical investigation of these predictions.

Method

Data Collection

The global marketing research agencies GfK and TNS (formerly Taylor Nelson Sofres) collected the data in demographically diverse samples of respondents in 28 countries in Western Europe (Austria, Belgium, Denmark, France, Germany, Great Britain, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland), Central/Eastern Europe (Czech Republic, Hungary, Poland, Romania, Russia, Slovakia, Ukraine), Asia (China, Japan, Taiwan, Thailand), South America (Argentina, Brazil), and North America (the United States). A Web survey was used in countries in which the Internet is widespread. In other countries, mall intercepts were used, in which respondents either

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[2] Steenkamp and Gielens (2003) find that the effect of innovativeness on behavior is stronger for more novel products. To the extent that global products are more strongly associated with the introduction of radically new products than local products, this should further strengthen the effect of innovativeness on AGP.

TABLE 3
Summary of the Expected Relationships Between Values and AGP and ALP

			Consumer Values		
Attitude Toward ...	National-Cultural Values	General Values	Object	Context	Time
Global products	Traditional/ secular–rational (+) Survival/ self-expression (–)	No sinusoid pattern but rather strong positive relationships with stimulation, power, and universalism	Materialism (+) Innovativeness (+)	Consumer ethnocentrism (–) Environmentalism (+/–)	Nostalgia (–)
Local products	Traditional/ secular–rational (–) Survival/ self-expression (–)	Sinusoid shape with peak for tradition and security and trough for stimulation and self-direction	Materialism (+)	Consumer ethnocentrism (+) Environmentalism (+/–)	Nostalgia (+/–)

filled out the questionnaire on laptops or completed a hard-copy version The total number of respondents was 13,112

Measurement of AGP and ALP

Triandis (see Triandis, Chen, and Chan 1998, Triandis and Gelfand 1998) proposes and validates the use of descriptive response options (called "scenarios") with a forced-choice format to measure cultural attitudes In his work, each response option represents a particular cultural species We adopted Triandis's measurement procedure We constructed a multi-item scale in which each item pertains to a specific product domain central to consumer culture Several product categories have been consistently recognized as being central to consumer culture As the most visible marketing symbol, brands are generally regarded as a key component of consumer culture (Holt 2002, McCracken 1986) In his work on cultural capital, Holt (1998, p 7) identifies food, clothing, home furnishings, entertainment (music, television, movies), and lifestyle (vacations, sports, hobbies) as important cultural product categories Slater (1997) highlights the role of entertainment (p 15) and lifestyle (p 87) Finally, Tomlinson (1999, p 83) identifies clothes, food, entertainment (music, firm, television), furnishings, and brands as "cultural goods around the world"

In line with this body of work, we included the product domains lifestyle, entertainment, home furnishings, foods, clothing, and brands in our AGP/ALP measurement instrument For each of the six items (product domains), the respondent selected one scenario from the four scenarios provided that most closely matched their preference These scenarios represent the four ideal types of attitudinal combinations in Figure 1 preference for global products (homogenization), preference for local products (localization), preference for combining global and local products in consumption repertoire (glocalization), and lack of interest in local and global products (glalienation) Our measurement approach is consistent with Eagly and Chaiken's (1998, p 269) position on attitudes "As an internal state, an attitude is not directly observable [we use a latent variable approach] but is inferred from observable responses [i e , the scenarios we selected] which consist of evaluative responding [respondents selected the scenario that most closely matched their preferences] that occurs in conjunction with the stimuli [the six product domains] that denote the evaluated entity [these product domains have been consistently identified as being key components of consumer culture]" For the measurement instrument, see the Appendix We adapted a subset of our measurement items from the work of Alden, Steenkamp, and Batra (2006)

Following Triandis, Chen, and Chan (1998), Triandis and Gelfand (1998), and Alden, Steenkamp, and Batra (2006), we purposefully chose a multicategory, forced-choice response format rather than a rating scale Socially desirable responding is an important concern in cross-national research (Steenkamp, De Jong, and Baumgartner 2010) A forced-choice format reduces the impact of this response tendency because respondents must "consider the social desirability of all four elements [response categories], which is more difficult than judging the social desirability of a single element" (Triandis, Chen, and Chan 1998, p 277) Thus, it is not surprising that the multicategory forced-choice format is widely used in psychology and education (e g , Bolt, Cohen, and Wollack 2001, Van der Linden and Hambleton 1997)

We pretested our AGP/ALP instrument on a sample of 243 U S consumers As part of a larger questionnaire, we administered the six-item multicategory AGP/ALP instrument together with items measuring constructs that should be theoretically related to AGP and ALP The validation constructs were based on those of Appadurai (1996) and Tomlinson (1999), and we measured them with multiple items, using seven-point rating scales (the only exception was foreign travel, which we assessed with a single frequency item) We estimated the AGP and ALP latent scores using the nominal item response theory (IRT) model described subsequently The correlation between latent scores was – 320, which is significantly different from –1 ($p <$ 001) Respondents high on AGP had more social contacts with foreigners (r = 460), more exposure to foreign countries in their childhood (r = 176), greater consumption of foreign mass media (r = 516), more experience traveling abroad in the last two years (r = 360), and more interest in foreign lifestyles (r = 562) People with higher ALP were less prone to have traveled abroad in the recent past (r =

–.142), had less interest in foreign lifestyles (r = –.220), had less contact with foreigners (r = –.293), and had lower consumption of foreign mass media (r = –.123).[3] The pattern of correlations provides initial support for the nomological validity of our measurement instrument.

Measurement of Antecedents

General values. We measured respondents' general value structure using Schwartz's (1992) value survey. The survey consists of 45 values, covering all value domains, and exhibits a high level of consistency in motivational meaning across cultures (Schwartz and Sagiv 1995). We adhered closely to the guidelines Schwartz (1992) provides on how to measure the values. We listed each value by a descriptive name (e.g., "equality") with a short explanation in parentheses (e.g., "equal opportunity for all"). Respondents rated each value as a guiding principle in their lives on a scale ranging from –1 to 7 (–1 = "opposed to my values," 0 = "not important," 3 = "important," and 7 = "of supreme importance").

Consumer values. We measured materialism with six items taken from Richins and Dawson (1992) and consumer innovativeness with eight items taken from Steenkamp and Gielens (2003). We measured consumer ethnocentrism with four items taken from Shimp and Sharma (1987), environmentalism with three items taken from Grunert and Juhl (1995), and nostalgia with two items taken from Holbrook (1993). We offered items in a random order, and participants rated them on five-point Likert scales. For most measures, we used a short-form version that performed well in previous research (Alden, Steenkamp, and Batra 2006; Steenkamp, Ter Hofstede, and Wedel 1999).

National-cultural values. We measured country scores on the traditionalism/secular–rational and survival/self-expression dimensions taken from Inglehart and Welzel (2005).

Sociodemographics. We collected information on age, sex, household size, the number of years of formal education, social class (six categories from lower class to upper class), and evolution of household income in the last three years (five categories from "gone down a lot" to "gone up a lot").

Analytical Procedure

We need to relate the categorical observed responses to the six items to the underlying continuous latent variables of AGP and ALP. In turn, we posit that the individual-level scores on AGP and ALP are related to general values, consumer values, and sociodemographics and that the country-level, aggregate scores on AGP and ALP are related to national-cultural values. These relationships need to be estimated in a hierarchical, cross-national context, in which consumers are nested within countries.

Our measurement model defines operating characteristics for each response category such that the probability of response, conditional on the latent variables, is restricted to sum to unity (Bock 1972). As in other latent variable models, the probability of a given pattern of item response can be expressed as the product of the corresponding category characteristics conditional on the latent variables. The probability that a respondent i in country j (j = 1, …, 28), with latent values AGP_{ij}, ALP_{ij} will respond to item k (k = 1, …, 6) in nominal response category c (c = 1, …, 4) is given by

$$\Pr\left(X_{ijk}=c\right)=\frac{\exp\left(Z_{ijkc}\right)}{\sum_{h}\exp\left(Z_{ijkh}\right)}, \tag{1}$$

where

$$Z_{ijkc}=\xi_{kc}+a_{kc,1}AGP_{ij}+a_{kc,2}ALP_{ij}. \tag{2}$$

The term Z_{ijkc} can be regarded as the unobserved preference of respondent i from country j for response category c in the context of product domain k.[4] The parameter ξ_{kc} indicates a category response "easiness" parameter, with more positive (negative) values being associated with a greater easiness (greater difficulty) of the response category being chosen. The parameters $a_{kc,1}$ and $a_{kc,2}$ refer to the discrimination parameter for the underlying attitudes toward global and local products, respectively.[5] We allow the easiness and discrimination parameters to vary across items and response categories.

We define the multivariate logit as the vector with elements Z_{ijk1}, Z_{ijk2}, Z_{ijk3}, and Z_{ijk4}. An important property of Equation 1 is the invariance with respect to translation of the logit, which implies that the elements of this vector may be subjected to a linear restriction (Bock 1972) such as the following:

$$\sum_{c=1}^{4}Z_{ijkc}=0. \tag{3}$$

This implies that the item parameters in Equation 2 are subject to the same restriction:

$$\sum_{c=1}^{4}a_{kc,1}=0,\ \sum_{c=1}^{4}a_{kc,2}=0,\ \sum_{c=1}^{4}\xi_{kc}=0. \tag{4}$$

Because both latent variables influence each observed item, a model without restrictions is overparameterized and suffers from rotational indeterminacies To identify the model, we follow Béguin and Glas (2001) and place theory-based sign restrictions on the discrimination parameters Our confirmatory setting dictates that for the homogenization response $a_{,1}$ should be positive and $a_{,2}$ should be negative because a rise in AGP (ALP) should have a positive (negative) effect on the tendency to opt for global products only For the localization response, the opposite is true For the glocalization response, a rise in both AGP and ALP would give rise to an increase in the likelihood of the response option Finally, with glalienation, a rise in both AGP and ALP would negatively affect the odds of selecting the response option

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[3] Correlations exceeding the absolute value of .106 (.127, .167) are significant at 10% (5%, 1%).

[4] Logit models are the standard in psychometrics. The logit structure allows for closed-form expressions of the choice probabilities, which reduces complexity and greatly helps estimation. A limitation of the logit model is that it makes the assumption of independence of irrelevant alternatives (IIA). Although the IIA assumption is an issue in brand choice models (in which, consequently, probit models are favored), this is not true for the types of data encountered in psychometrics.

[5] In IRT models, it is common to talk about "difficulty" parameters. However, in our model, a more positive value of ξ is associated with lower "difficulty," which is exactly the reverse of standard IRT models. Therefore, to avoid confusion, we talk about easiness parameters. Discrimination parameters are conceptually similar to factor loadings in confirmatory factor analysis models (De Jong and Steenkamp 2010).

Although the sign of the discrimination parameters is fixed, it is the magnitude of the discrimination parameters and easiness parameters (which are freely estimated) that determines the shape of the probability surfaces in Equation 1 To arrive at the probability of any particular response for a specific item, we need to take into account the discrimination and easiness parameters for the focal response and for the other three responses options (see Equations 1 and 2)

Note that Equation 2 posits that the observed responses across the range of product domains can be explained by people's underlying, latent generalized AGP and ALP[6] There is empirical support for our position on AGP and ALP as generalized attitudinal constructs when the overall model fit and fit for each item are good, when reliability is good, when conditional on the latent AGP and ALP traits the nominal item scores are independent, and when the magnitude of discrimination parameters is as expected (this last condition indicates convergent validity for the individual product domains and response options)

Respondents' latent scores on AGP and ALP are related to individual-level antecedents, which yields the following Level 1 (individual-level) model

$$\text{(5)} \qquad \text{AGP}_{ij} = \mathbf{W}_{ij}\boldsymbol{\beta}_{j,1} + \varepsilon_{ij,1}, \text{ and}$$

$$\text{(6)} \qquad \text{AGP}_{ij} = \mathbf{W}_{ij}\boldsymbol{\beta}_{j,2} + \varepsilon_{ij,2},$$

where $\mathbf{W}_{ij}$ contains general values, consumer values, and sociodemographics To fix the scale, the variances of AGP and ALP scores are set equal to 1 We allow the error terms $\varepsilon_{ij,1}$ and $\varepsilon_{ij,2}$ to be correlated through a bivariate normal structure, that is,

$$\begin{pmatrix} \varepsilon_{ij,1} \\ \varepsilon_{ij,2} \end{pmatrix} \sim \text{MVN}\left[\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 & \rho \\ \rho & 1 \end{pmatrix}\right]$$

Our theorizing further posits that a country's aggregate scores on AGP and ALP are predictably related to the country's score on traditionalism/secular–rational and survival/self-expression Moreover, we examine whether the effect of each general and consumer value, as well as the sociodemographics, varies across countries as a function of the country's national-cultural values makeup This yields the following model at Level 2 (the country level) [7]

$$\text{(7)} \qquad \boldsymbol{\beta}_{j,1} = \boldsymbol{\gamma}_1\mathbf{Z}_j + \mathbf{u}_{j,1}, \text{ and}$$

$$\text{(8)} \qquad \boldsymbol{\beta}_{j,2} = \boldsymbol{\gamma}_2\mathbf{Z}_j + \mathbf{u}_{j,2},$$

where $\mathbf{Z}_j$ contains the two Inglehart dimensions and $\mathbf{u}_{j,1}$ and $\mathbf{u}_{j,2}$ are multivariate normally distributed error vectors with expected value of zero and covariance matrices $\mathbf{T}_1$ and $\mathbf{T}_2$, respectively

Estimation and Model Fit

We cast our model in a Bayesian framework, and we obtain the full probability model by specifying prior distributions for all parameters We use standard noninformative priors (normal distributions for means structure and inverse Wishart distributions for variance–covariance matrices) for the parameters The only parameter that merits additional attention is the correlation parameter σ Because it is bounded in the interval [–1, 1], we use a normal prior for the hyperbolic arctangent of σ The function atanh(σ) maps the parameter to the real line Estimation then proceeds by drawing from the posterior distributions of the parameters

To assess model fit, we use posterior predictive checks If the model fits the data, the frequency distribution of the observed nominal responses for each item should resemble frequency distributions generated from the posterior predictive distribution (for a similar approach, see Béguin and Glas 2001) In addition, we investigate local independence among pairs of item response categories using Yen's Q_3 statistic (Bolt, Cohen, and Wollack 2001) In IRT models, local stochastic independence refers to the assumption that responses to different items are independent given the latent variable values (this is conceptually similar to unidimensionality in confirmatory factor analysis) A procedure based on Yen's Q_3 statistic is useful in the current context Under the assumption of local independence, the correlations should be approximately normally distributed (Yen 1984) A residual correlation of zero implies that the latent consumer attitudes account for the dependence among response categories

Results

Psychometric Assessment of AGP/ALP Instrument

We performed several psychometric assessments of the AGP/ALP instrument First, the close correspondence between the global observed and the posterior predictive frequency distribution per item (product domain) indicates that our model achieved good overall fit and that the latent variables explain the variation in all items.[8] Fit at the country level is also good. Second, the 95% credible interval for all posterior discrimination parameters always excludes zero, and the magnitudes of the discrimination parameters are as expected. Third, we test for local independence of item response categories, using Yen's Q_3 statistic. The Kolmogorov–Smirnov test indicates that the hypothesis of normally distributed residuals cannot be rejected ($Z = .545, p > .10$). The average residual correlation is a negligible .007, indicating that we do not need more than our two latent variables (AGP and ALP) to explain the observed variation in item scores. Fourth, the correlation between consumers' latent scores on AGP and ALP is significantly ($p < .001$) below (minus) unity: $r = -.431$. Fifth, the measurement instrument is reliable. The reliability of AGP is .95, and the reliability of ALP is .91.

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[6] Note that AGP and ALP in Equation 2 only have subscripts i and j, not a subscript k

[7] We employ (1) individual-level predictors W_{ij} to explain differences in individual-level attitudes (we estimate Equations 5 and 6 at the individual level) and (2) country-level predictors to explain differences in country-level (aggregate) parameters (we estimate Equations 7 and 8 at the country level) By matching the level of aggregation of predictor and criterion variables, our model specification avoids the ecological fallacy that will result if inferences are drawn about individual-level behavior from aggregate national-cultural variables (Adamopoulos 2008)

Sixth, as we mentioned previously, one reason to use a multicategory, forced-choice format is to lessen potential contamination with socially desirable responding (Triandis, Chen, and Chan 1998). Our global questionnaire also included the Balanced Inventory of Desirable Responding (BIDR). We regressed AGP and ALP scores on the two components of the BIDR—self-deceptive enhancement and impression management. All four standardized regression coefficients are well below the cutoff of |.20| that Steenkamp, De Jong, and Baumgartner (2010) recommend as indicative of a nonnegligible relationship to socially desirable responding.

Figure 4 shows the within-country distribution of AGP and ALP scores for the world's four-largest economies: the United States, Japan, China, and Germany. In all four countries, there is a wide distribution in scores on both constructs, indicating considerable heterogeneity in attitudes within each country. Not only is there substantial variation in scores within countries, but we also find that, on average, some countries score much higher on AGP and/or ALP than other countries. Figure 5 shows the location of the countries on AGP and ALP. It is noteworthy that the United States rates higher on average on ALP and lower on AGP than most other countries in our sample. This is consistent with the observation that the United States is a disproportionate "producer" of global content (Holton 2000), which for U.S. consumers feels like local imagery (Alden, Steenkamp, and Batra 1999, p. 78). These results show that consumers differ systematically on AGP and ALP and that these attitudes are not just specific for a particular product but rather are generalized attitudes across a wide variety of product domains.

Measurement Properties of Antecedents

We derived construct scores for general values and consumer values using the IRT-based procedures that De Jong, Steenkamp, and Fox (2007) and De Jong, Steenkamp, and Veldkamp (2009) propose, which do not require items to be invariant across countries. Construct reliabilities are all above .60 (see also Tellis, Prabhu, and Chandy 2009). We test for discriminant validity between the survey constructs by constraining the correlations, one at a time, between construct scores for general values, consumer values, AGP, and ALP to unity. In general, the correlations among our predictor variables are low, and the maximum variance inflation factor is only 2.84. These findings indicate that multicollinearity is not an issue in our latent variable model (Grewal, Cote, and Baumgartner 2004).

Antecedents of AGP/ALP: Main Effects

We build our model by consecutively adding groups of antecedents to our set of predictors of AGP and ALP. Recall that our conceptual framework (Figure 2) specifies that each block of constructs adds to our understanding of AGP and ALP. As a baseline model, we estimated a model with a random intercept but no individual-level or country-level predictors. The Level 1 variances for AGP and ALP are .725 and .651, and the Level 2 variances are .181 and .215, respectively. Thus, 20.0% (24.8%) of the variation in AGP (ALP) is between countries. The first model includes only the most basic set of predictors, namely, the sociodemographic covariates. Subsequently, we add general values (Model M2), consumer values (Model M3), and national-cultural values (Model M4).

After we add the sociodemographics (M1), the Level 1 variances decrease to .643 (AGP) and .621 (ALP), respectively. Thus, sociodemographics explain 11.3% of individual differences in AGP and 4.7% of individual differences in ALP. Adding the general values (M2) explains an additional 5.4% of the variance in AGP and 5.2% of the variance in ALP. Consumer values (M3) explain another 7.1% of the variance in AGP and 4.1% of the variance in ALP. Finally, we include the national-cultural values (M4), which explain 60.2% of the cross-national variation in AGP and 53.1% of the cross-national variation in ALP.

Table 4 reports the unstandardized regression coefficients for each model.[9] The high degree of stability of parameter estimates across the different model specifications attests to the robustness of our results. The decrease in the error variance between models is always significant ($p < .001$), which provides basic support for our theory because, indeed, each group of drivers contributes to explaining AGP and ALP. Thus, we focus on Model 4. Unless indicated otherwise, in our subsequent discussion, the parameters are significant at 5%.[10]

Table 4, Panel A, shows that AGP is positively related to the importance a person attaches to power, stimulation, and universalism values, while it is negatively related to tradition and conformity. Thus, the general-values profile of AGP is more complex than Schwartz's (1992) sinusoid theory suggests but is consistent with the idea that AGP are multifaceted, having both universalism and power connota-

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[8] Details are available on request.

[9] We examined whether responses differed between questionnaire administration (hardcopy versus online) by adding a dummy variable in the equations for the country intercept. In neither of the cases was the dummy significant.

[10] A 95% credible interval that does not contain zero is interpreted as "significant at 5% in frequentist terms."

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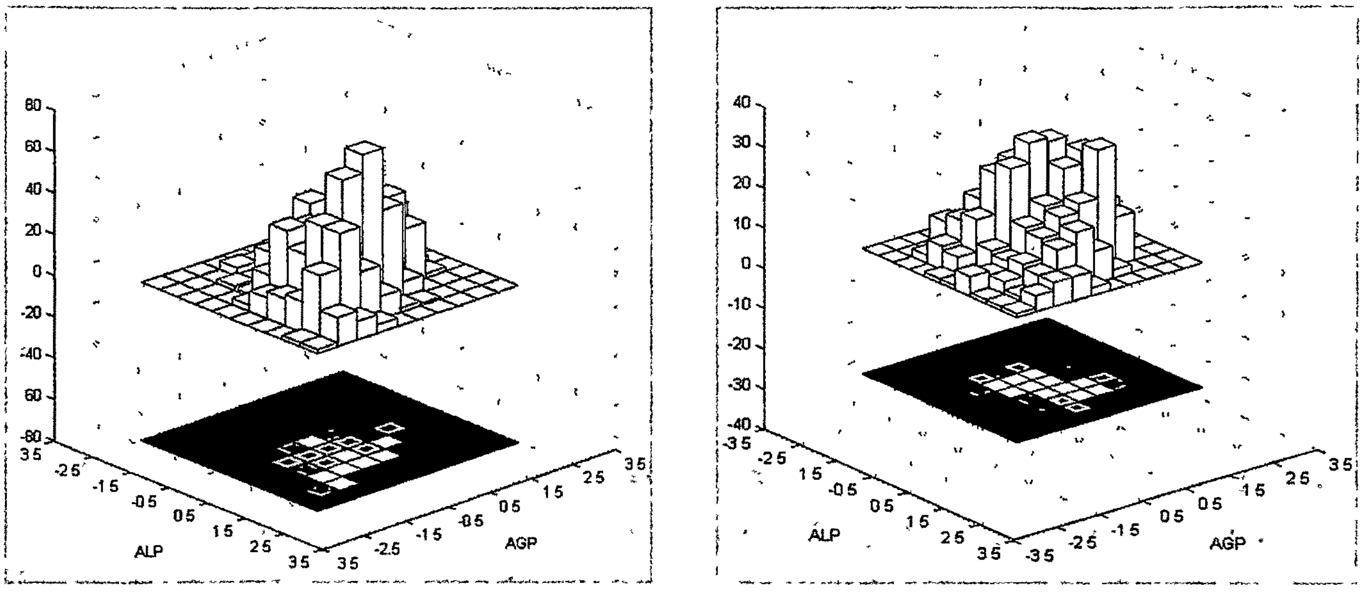
FIGURE 4
Intensity Map Posterior AGP and ALP Scores for the World's Four Largest Economies

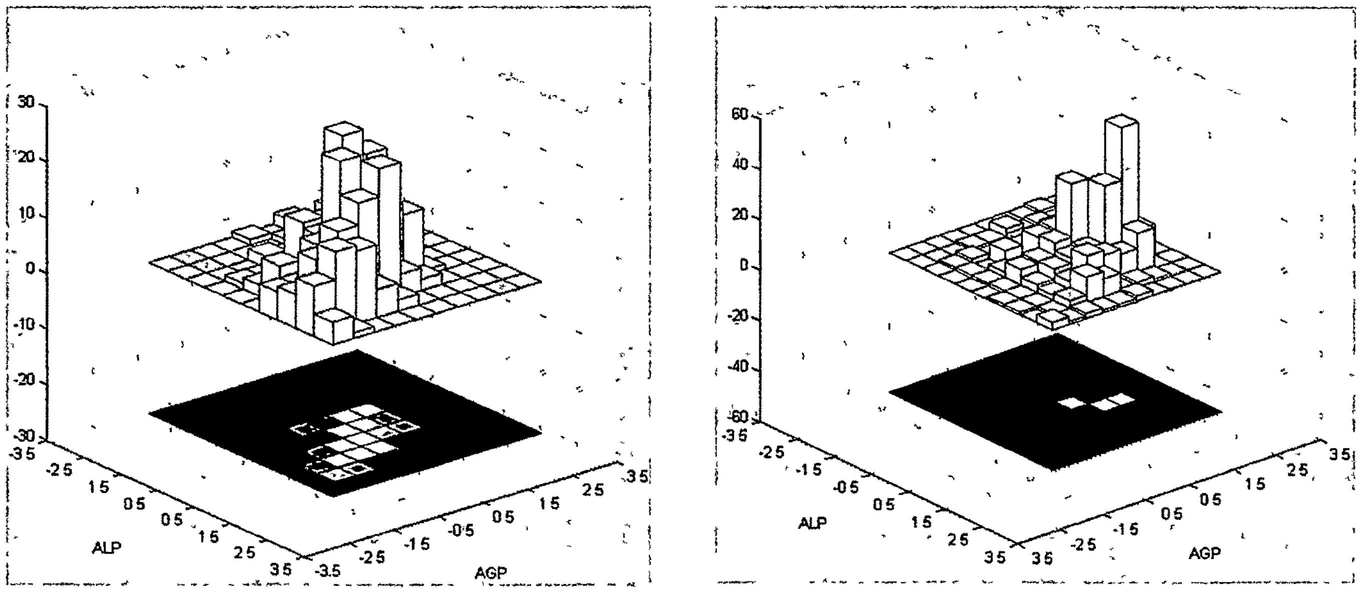


A: United States

B. Germany

C: China

D: Japan



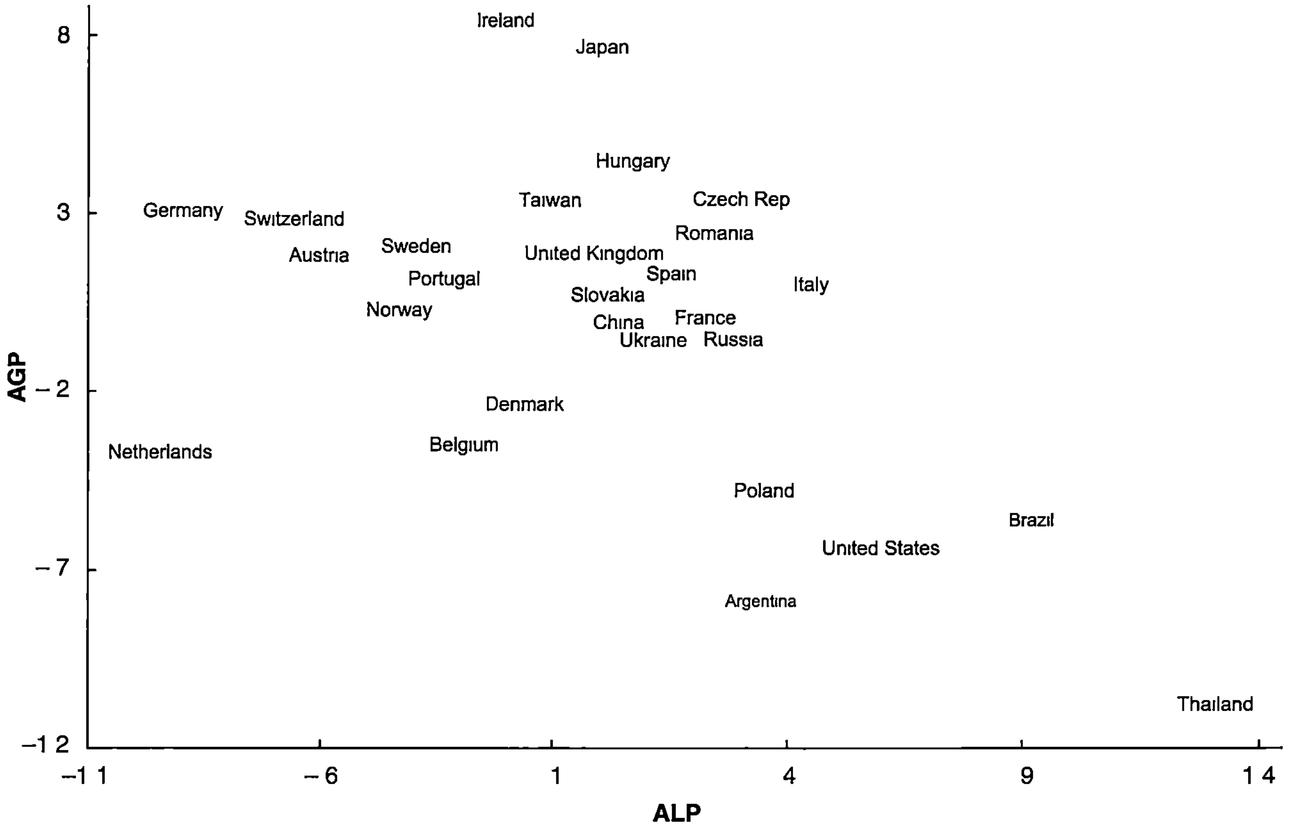
tions, which are diametrically opposed to each other (Figure 3) We further propose that people high on AGP are more materialistic and innovative, though less ethnocentric and nostalgic

We obtain a clear sociodemographic profile of AGP People most positively inclined toward consumption of global products are the younger, female elite (higher educated, higher social class), with small households Sociodemographic segments that do not possess all these characteristics will be lower in AGP, but the specific coefficients we report in Table 4, Panel A, show the relative trade-offs For example, the predicted AGP of a man aged 25 is higher than that of a woman aged 40

Finally, we find support for the expectation that, on average, some countries are higher on AGP than other countries because of systematic differences in the national-cultural value priorities of the country in which they live Specifically, AGP is lower in countries high on self-expression, and it is higher in secular–rational countries

In contrast to AGP, ALP closely follows the sinusoid pattern posited in Schwartz's (1992) theory (see Table 4, Panel B) It is positively associated with the importance

FIGURE 5
Location of Countries on AGP and ALP



Notes Scores are relative to a mean score of zero on ALP and AGP across countries

given to tradition, conformity, and especially security values, and it is negatively associated with the importance given to stimulation and self-direction values The magnitude of the effects of the other value types lies in between these extremes and is nonsignificant

Materialistic people are more positive not only about global products but also about local products This runs counter to the alleged near equivalence of materialism with GCC that is present in the work of critical theorists, such as Holton (2000) and Ritzer (2007) However, it is consistent with the notion that materialism is an integral element of consumer culture, whether it is globally or locally conceived People high on ALP are also more ethnocentric and less nostalgic We find no evidence that environmentalism is associated with rejection of all consumer culture Rather, we find support for the notion that people who attach high importance to environmentalism tend to embrace local products This result is foreshadowed by Lash and Urry's (1994, p 305) contention that "for most people, the environment is their locality"

In terms of sociodemographics, we find that older people, women, and those who have recently experienced an increase in income hold more positive ALP Thus, women hold more positive attitudes toward both local and global products than men Finally, we find that ALP is higher in traditional countries than in secular–rational countries In addition, ALP is higher in survival countries than in self-expression countries [11]

Interactions Between National Culture and Individual-Level Antecedents

An attractive feature of hierarchical models is that in addition to examining main effects, we can explore whether the

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[11] It has been suggested that general values work through consumer values in affecting consumer attitudes (e g , Van Raaij and Verhallen 1994) For mediation to occur, the effects of the general values on AGP/ALP should be much reduced/become insignificant when we add consumer values to the model We estimated the effects of the general values on the consumer values Innovativeness is primarily related to stimulation, materialism to hedonism, achievement, and (especially) power, consumer ethnocentrism to power and tradition, nostalgia to tradition, and environmentalism to universalism However, as Table 4 shows, the direct effect estimates of the general values, after we control for the consumer values (Model M3), are not much smaller than their total effects (Model M2) On average, only 23% of the total effect is mediated by consumer values Furthermore, 10 of 11 significant effects of the general values remain significant after we added consumer values Thus, although we find some effects of general values on consumer values, we do not find strong evidence that consumer values mediate the effect of general values on AGP and ALP

TABLE 4
Posterior Mean Estimates

A: Estimates of Effects on AGP

Predictor	**M1**	**M2**	**M3**	**M4**	**M5**
Intercept	**.200**	**.205**	**.201**	**.202**	**.200**
Sociodemographics					
Age	**–.014**	**–.011**	**–.008**	**–.008**	**–.009**
Sex (1 = women)	**.072**	**.084**	**.068**	**.068**	**.070**
Education	**.058**	**.049**	**.043**	**.043**	**.045**
Social class	**.072**	**.063**	**.042**	**.042**	**.041**
Household size	**–.019**	**–.011**	**–.011**	**–.011**	**–.011**
Income change	**.012**	**.011**	.002	.001	.002
General Values					
Power		**.063**	**.036**	**.036**	**.040**
Achievement		.025	.004	.003	–.001
Hedonism		**.035**	.014	.015	.012
Stimulation		**.090**	**.073**	**.073**	**.063**
Self-direction		.018	.010	.009	.012
Universalism		**.055**	**.067**	**.068**	**.068**
Benevolence		–.010	–.005	–.004	–.002
Tradition		**–.050**	**–.023**	**–.022**	**–.021**
Conformity		**–.075**	**–.061**	**–.063**	**–.059**
Security		–.043	–.038	–.038	–.036
Consumer Values					
Materialism			**.170**	**.169**	**.167**
Innovativeness			**.355**	**.357**	**.359**
Consumer ethnocentrism			**–.099**	**–.099**	**–.102**
Nostalgia			**–.066**	**–.066**	**–.067**
Environmentalism			.016	.016	.016
National-Cultural Values					
Traditional/secular–rational				**.120**	**.142**
Survival/self-expression				**–.054**	**–.069**
Cross-Level Interactions					
Age × self-expression					**.001**
Universalism × self-expression					**.022**
Universalism × Secular–rational					**–.020**
Consumer ethnocentrism × secular–rational					**.022**

B: Estimates of Effects on ALP

Predictor	**M1**	**M2**	**M3**	**M4**	**M5**
Intercept	.070	.066	.048	.049	.060
Sociodemographics					
Age	**.008**	**.006**	**.005**	**.005**	**.005**
Sex (1 = women)	**.047**	**.042**	**.046**	**.047**	**.046**
Education	**–.025**	–.009	–.001	–.003	.001
Social class	.005	.008	.014	.014	.015
Household size	**.015**	.008	.008	.008	.008
Income change	**.014**	**.014**	**.013**	**.013**	**.012**
General Values					
Power		.015	–.029	–.028	–.029
Achievement		.014	.010	.009	.010
Hedonism		.002	.002	.004	–.000
Stimulation		**–.063**	**–.056**	**–.056**	**–.050**
Self-direction		**–.064**	**–.043**	**–.043**	**–.048**
Universalism		–.006	–.015	–.015	–.018
Benevolence		–.021	–.008	–.008	–.001
Tradition		**.067**	**.054**	**.053**	**.053**
Conformity		**.033**	**.030**	**.030**	**.035**
Security		**.118**	**.109**	**.109**	**.109**

effect of specific individual-level antecedents varies across countries in function of their different national culture. After all, the shared cultural priorities in society create social reinforcement contingencies to which people must adapt to function smoothly and effectively. These positive or negative institutional reinforcement mechanisms give

TABLE 4
Continued

Predictor	M1	M2	M3	M4	M5
Consumer Values					
Materialism			**.099**	**099**	**109**
Innovativeness			– 049	– 046	– 032
Consumer ethnocentrism			**.083**	**.083**	**.082**
Nostalgia			**–.050**	**–.051**	**–.052**
Environmentalism			023	**.023**	**.018**
National-Cultural Values					
Traditional/secular–rational				**–.220**	**–.190**
Survival/self-expression				**–.096**	**–.114**
Cross-Level Interactions					
Age × self-expression					**–.002**
Universalism × self-expression					**.017**
Universalism × secular–rational					**.021**
Consumer ethnocentrism × secular–rational					**–.019**

Notes Parameter estimates in bold are significant at $p <$ 05

rise to interactions between society-level and individual-level variables National-cultural value priorities of a particular country will encourage the expression of individual-level values that are congruent with these national-cultural value priorities, while the expression of values that run counter to those national-value priorities are discouraged (Smith and Schwartz 1997) Mathematically, this is expressed as cross-level interactions between national-cultural values and individual drivers [12]

Rather than estimating all possible interactions, which would lead to unstable results and multicollinearity, we adopt the following procedure We restrict ourselves to individual-level antecedents for which the variance of the random component is significant, indicating that the effect varies across countries Next, for those constructs, we estimate the interactions with the two Inglehart dimensions We retain interactions that are significant at $p <$ 05 We report the results as Model M5 in Table 4, Panels A and B We graphically depict the seven significant interactions in Figure 6, showing the effect of a particular individual-level variable for one standard deviation below the mean versus one standard deviation above the mean for countries that rate very high (+2) versus very low (–2) on the national-cultural dimension involved

We find that the effects of consumer ethnocentrism are more pronounced in traditional societies than in secular–rational countries That is, ethnocentrism has a stronger positive effect on ALP and a stronger negative effect on AGP the more traditional the society is This result is intuitive, given the basic congruence between the emphasis traditional societies place on national pride and protectionism and the goal of ethnocentrism, which is to protect one's country and employment through purchase of locally made products We further find that the positive effect of the importance attached to universalism on AGP is larger in self-expression societies than in survival countries This finding is consistent with the basic psychological congruence between embracing universalism and the orientation of self-expression societies on the wider world

We also find several interactions involving the sociodemographics age and social class The positive effect of age on ALP and the negative effect of age on AGP are stronger in survival societies than in self-expression societies Young people in survival societies have the most positive AGP Their cultural capital is low, and they may have most to gain by embracing the progress and modernity signified by global products

Finally, we observe that the effect of social class on ALP is affected by national culture The effect of social class on appreciation of local products is negative in less advanced survival and traditional countries In these societies, the social elite turns away from local products, which may be perceived as old-fashioned, if not outright backward Our finding is broadly consistent with Belk's (2000, p 13) argument that "the rise of global consumption ideals, potentially makes the elite among Third World consumers into cosmopolitans who are more concerned with how they compare to the world's privileged consumers than they are to compare themselves locally" The opposite effect is found in secular and self-expression societies, in which higher social classes may "rediscover" unique, "authentic" aspects of local products

General Discussion

In this article, we examine the constellation of AGP and ALP in a global setting We propose a fully crossed structure AGP and ALP, which gives rise to four types of responses to the joint forces of globalization and localization homogenization, glocalization, localization, and glalienation We link AGP and ALP to three groups of val-

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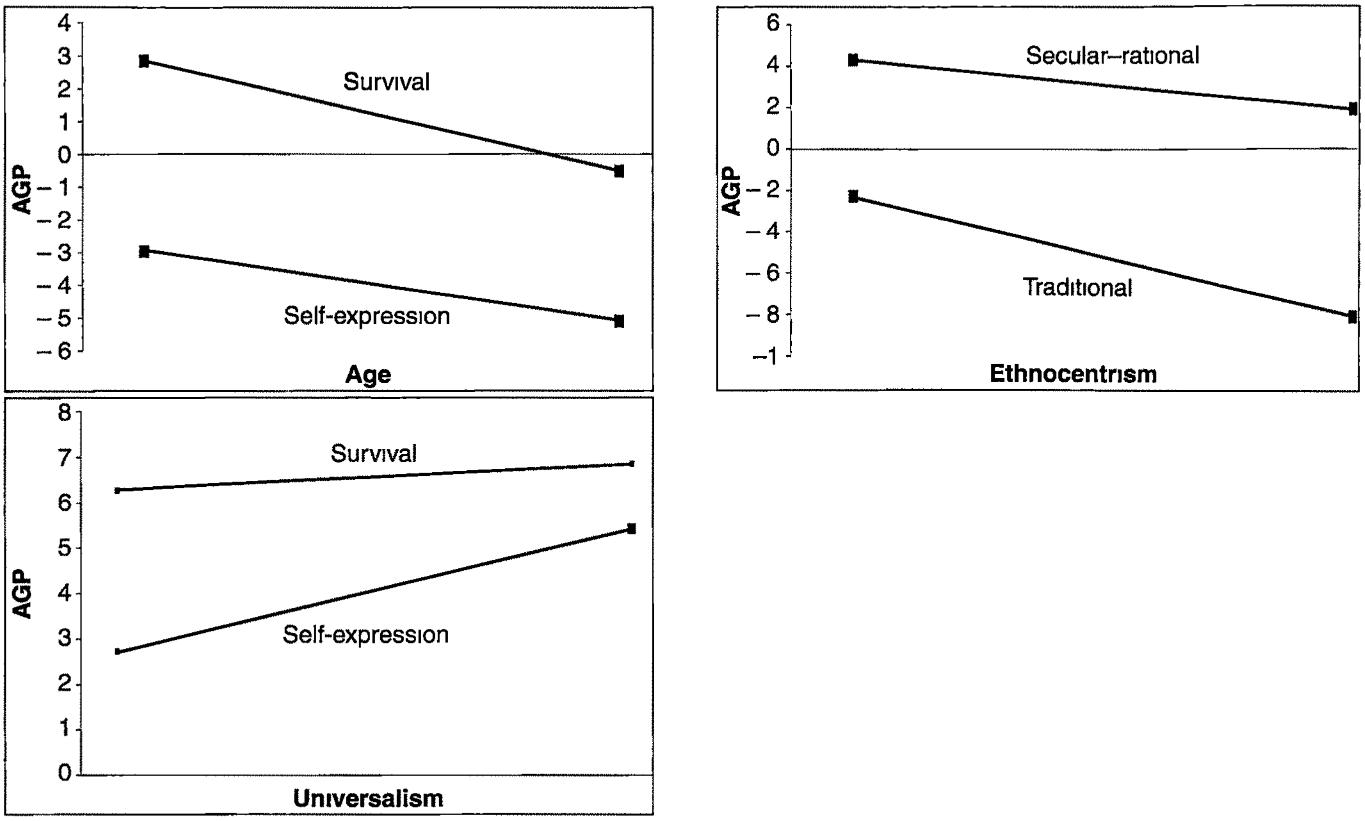
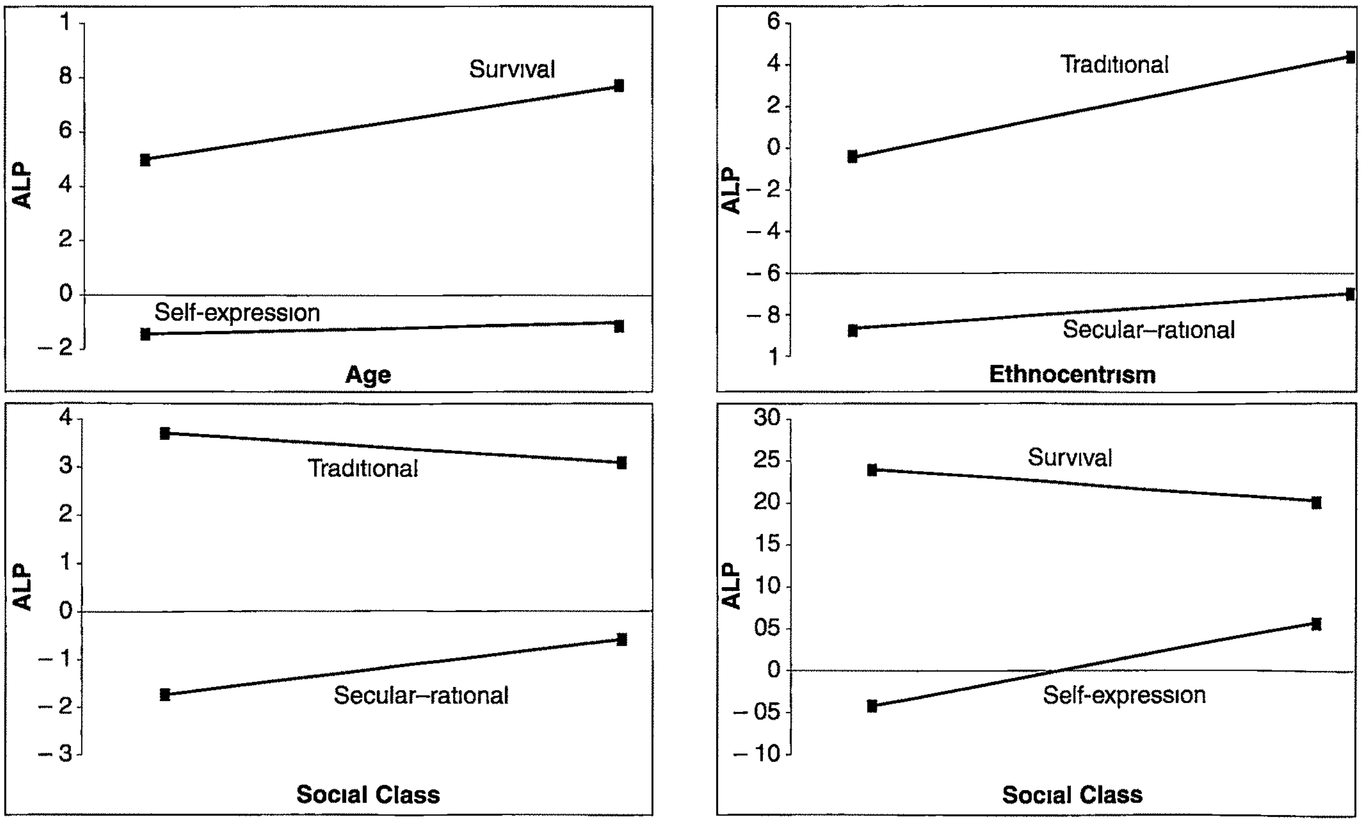
[12] Note that we neither hypothesize nor employ the Inglehart national-cultural framework to explain individual-level behavior Our focus is on whether the effect of a particular antecedent of A_{GCC} or A_{LCC} varies systematically across countries, due to their varying national-cultural context To illustrate, consider the effect of consumer ethnocentrism on A_{GCC} The strength of the effect may vary across countries, and cross-level interactions try to explain the between-country variation in the strength of the effect using the respective country scores on the Inglehart dimensions Thus, the cross-level interactions work on country-level data This approach avoids the ecological fallacy (Adamopoulos 2008)

FIGURE 6
Moderating Effect of National-Cultural Values on Individual-Level Antecedents of AGP and ALP

A AGP



B. ALP



ues, with sociodemographics as covariates We use a dedicated data set across 28 countries, with large, demographically diverse samples of consumers

We find that some antecedents exhibit directionally the same (significant) effect on AGP and ALP (materialism, nostalgia, survival/self-expression, and the covariate sex) Other antecedents exhibit directionally opposite effects on AGP and ALP Stimulation has a positive effect on AGP, while its effect on ALP is negative Conversely, tradition, conformity, consumer ethnocentrism, traditional/secular–rational, and the covariate age have a positive effect on ALP but a negative effect on AGP Finally, some antecedents affect only ALP (self-direction, security, environmentalism, and the covariate income change) or AGP (power, universalism, innovativeness, and the covariates education, social class, and household size) We also uncover several cross-level interactions

Our findings provide support for the existence of consumer AGP and ALP that generalizes across product domains and for our conceptual framework of antecedents of AGP and ALP The intricate pattern of antecedent effects is broadly supportive of our theorizing (Table 3) and shows that ALP and AGP are complex and distinct, yet related constructs The AGP and ALP constructs are not polar opposites, and to fully understand the important attitudes, we need to consider values at different levels of abstraction

In summary, our findings reveal a global profile of antecedents associated with different combinations of AGP and ALP Table 4 provides detailed results, but it is also useful to summarize our findings, in terms of both direction and significance of effects (see Figure 7) Although the effects are continuous, putting them in a 3 × 3 table is useful to convey the core findings Although we should be cautious in relating Figure 7 to Figure 1 (because Figure 1 is in levels, while Figure 7 presents slopes), we can nonetheless construct a profile of each of the four consumer responses to the forces of globalization and localization

People exhibiting a homogenization response, built around the utilitarian convenience of global products and people's associated dreams of success and global citizenship, are younger, high on stimulation, and low on ethnocentrism They reject tradition and conformity On average, this response will be evaluated more positively in secular–rational societies Conversely, people who favor the localization response, preferring local products and rejecting global products, are older, ethnocentric people who value tradition and conformity This response is more common in traditional cultures People who prefer the glocalization response, desiring to creatively combine both local and global products in their consumption repertoire, tend to be forward-looking women who value materialism On average, this response option is evaluated more positively in

FIGURE 7
Summary of Effects

	AGP		
ALP	Negative Effect	No Effect	Positive Effect
Negative Effect	•Nostalgia •Sex male •National-cultural self-expression	•Emphasis of self-direction values	•Emphasis on stimulation •National-cultural secular–rational
No Effect	•Household size	•Emphasis on achievement •Emphasis on hedonism •Emphasis on benevolence	•Emphasis on universalism and power •Innovative •Education •Social class •Effect of universalism stronger in self-expression societies
Positive Effect	•Emphasis on tradition and conformity •Ethnocentrism •Age •National-cultural traditional •Effect of ethnocentrism stronger in traditional societies •Effect of age stronger in survival societies	•Emphasis on security values •Environmentalism •Increase in household income	•Materialism •Sex female •National-cultural survival •Social class in self-expression and secular–rational societies

survival countries. Finally, the glalienation response, indicating alienation from the (alleged) shallow world of consumer products in general, whether they are locally or globally conceived, is evaluated more positively among backward-looking (nostalgic) men, who reject materialism and live in self-expressive countries.

Managerial Implications

Brand portfolios. Many international companies are altering their brand portfolios, shedding local brands while favoring global brands—brands that consumers can find under the same name in multiple countries with generally similar and centrally coordinated marketing strategies (Steenkamp, Batra, and Alden 2003). The prevalence of ALP in different countries (see Figure 4) indicates that international companies should be careful in relying too much on global brands because this strategy may not work well with large segments of consumers. A carefully crafted portfolio of local and global brands may be preferable to an overemphasis on global brands. One company that pursues such a strategy with considerable success is the beer company Anheuser-Busch InBev. It has a carefully crafted brand portfolio that contains both global beer brands (Budweiser, Stella Artois, Beck's) and local "champions," such as Sibirskaya Korona (Russia), with "a heritage dating back to the time of the Tsars", Chernigivske (Ukraine), with "a strong connection to national pride and identity", and Antarctica (Brazil), which sponsors "regional cultural events that emphasize its main characteristics: quality, authenticity, relaxation, and fun" (Anheuser-Busch InBev 2010, pp. 22–23).

Positioning strategies for global firms. Alden, Steenkamp, and Batra (1999) document the widespread use of GCC and LCC positioning strategies by brand managers around the world. A GCC positioning strategy should appeal to consumers high on AGP, while a LCC positioning strategy should be attractive to consumers high on ALP (Alden, Steenkamp, and Batra 1999). Our empirical findings can help managers evaluate receptivity to GCC versus LCC for individual countries. This can be done by multiplying the (publicly available) country scores on the Inglehart dimensions by their regression estimates reported in Table 4 (Model M4). To illustrate, consider a manager who contemplates a push into Eastern Europe and wants to find out how the emerging countries Turkey and Slovenia score on AGP and ALP to evaluate whether LCC or GCC is more likely to be successful in terms of market acceptance. By multiplying the scores for Turkey on the self-expression (–.33) and secular–rational (–.89) dimensions (Inglehart and Welzel 2005) with their respective parameter estimates (Table 4), we find that Turkey has a high ALP score compared with the countries in our sample. In contrast, Turkey's AGP score is rather low (significantly below the country mean AGP score). This suggests that a LCC brand positioning strategy is called for in Turkey. A similar type of analysis for Slovenia (with self-expression score of .38 and secular–rational score of .95) reveals that Slovenia's AGP score is higher than most countries in our sample, while the ALP score is rather low. Thus, GCC positioning might be preferred in Slovenia. Recommendations can be refined by taking the characteristics of the target segment into consideration.

Global account management. Global account management (GAM) treats a customer's operations worldwide as one integrated account, with coherent terms for pricing, product specifications, positioning, and service. In the last decade, GAM programs have proliferated, but success has been mixed at best. Although the customer firm's headquarters might be committed to the global strategy that is required for GAM to be successful, local subsidiaries in countries in which AGP are negative are prone to obstruct the GAM program because they know that much more customization of products and services is required in their markets (Yip and Bink 2007). In addition, GAM actors may need to be locals instead of foreigners and may need to be placed at the regional level so that local environmental conditions are properly understood. Using the model estimates to evaluate how countries score on AGP and ALP helps the management at headquarters understand the countries in which local adaptation of GAM is necessary. Such a contingent approach will lead to greater acceptance by local subsidiaries and greater global effectiveness (see Grewal, Chandrashekaran, and Dwyer 2008).

Strategies for local firms. We should not forget that the business arena also includes local firms whose survival is constantly threatened by competition from international firms. If local firms try to outcompete international firms on economies of scale and scope, they are essentially playing the game at which the latter companies excel. Instead, local firms can better create consumer value by leveraging the advantage that is inherent to their context and compete on local cultural relevance. Ger (1999, p. 71) calls local culture "the most accessible yet least utilized resource for local firms." She argues (p. 71) that for local firms pursuing such a strategy, "finding and targeting segments likely to respond positively to the possible offerings are the key success factors in any competitive strategy." Segmenting the market on ALP and using the results reported in Table 4, Panel B, to find and target the segments can help local firms pursue such a focused localization strategy.

Sociodemographic segmentation. Previously, we suggested the potential of our model estimates for segmentation purposes (Model M4 in Table 4). We conclude by highlighting the actionability of a subset of our results for segmentation, namely, the findings for sociodemographics (Model M1). Special attention to sociodemographics is warranted because they are the Holy Grail of market segmentation. Sociodemographic segments are easy to construct, the resultant strategies are easy to implement, and the segments are readily accessible because of wide availability of media profiles. Unfortunately, sociodemographics usually are of little use for segmentation purposes because of their negligible relationship to relevant attitudes and behavior (Wedel and Kamakura 2000). However, this general finding does not apply to AGP and ALP Indeed, sociodemographics explain a substantial percentage of variance in the attitudes, on par with (ALP) or clearly exceeding (AGP) the predictive power of either general values or consumer values The results we report for Model M1 (Table 4) can be used for assessing receptivity to global and local positioning strategies for different global target segments We can refine this analysis by taking into account that the effects of age and social class are moderated by the national-cultural environment

Further Research

The values-based framework can be extended by including individual-level cultural values What is the structure of individual-level cultural values? The logical assumption is that their structure mirrors the national-cultural value structure However, work by Bearden, Money, and Nevins (2006) and Schwartz (1994) shows that this is not the case Thus, researchers need to employ frameworks that have been developed for the individual level A prime candidate is Triandis's (e g , Triandis and Gelfand 1998) four-factorial individualism/collectivism–horizontal/vertical framework We urgently need additional theorizing and empirical research to understand the commonalities and differences between individual-level and national-level cultural values frameworks, how Triandis's framework is related to Schwartz's (1992) framework, and how individual-level and national-level cultural values frameworks can be integrated

Prior literature has examined the conditions under which consumers are influenced most by cultural values (e g , Aaker 2000, Briley and Aaker 2006) This stream of research finds that the state of mind and situation can affect the influence of cultural values on consumer judgments and decisions Our model does not disentangle the importance of individual-level versus cultural-level influences in specific situations and mind-sets Experimental methods are more suited than survey methods for studying these issues

Additional research is needed to explore in depth the relationship between GCC/LCC and AGP/ALP We argued that the conceptual rationale for proposing the existence of generalized consumer AGP (ALP) can be found in the central role of product consumption in contemporary GCC (LCC) However, we need to know more about how global/local products are imbued with global/local cultural content Which consumer cultural rituals, practices, symbols, and artifacts are especially important in cementing the link between GCC/LCC and global/local products? How can marketers use this information to better position their brands on GCC, LCC, or possibly a combination of the two? To address these questions, we advocate microanalyses of consumer cultures, using the qualitative techniques that consumer culture theory researchers employ (Arnould and Thompson 2005) These qualitative techniques can add rich theoretical insights that inform us about the different shapes and facets of GCC and LCC, which may direct and enrich subsequent large-scale (survey) research This will result in a virtuous cycle of the kind that Bass (1995) advocates Theoretical explanation of marketing phenomena (through qualitative microstudies) informs subsequent investigation of the marketing relevance of the theoretical explanations (through large-scale survey research), which will direct microstudies to unresolved issues, and so on

Appendix
AGP/ALP Measurement Instrument

Entertainment

1 I enjoy entertainment that I think is popular in many countries around the world more than traditional entertainment that is popular in my own country
2 I enjoy traditional entertainment that is popular in my own country as well as entertainment that I think is popular in many countries around the world
3 I enjoy traditional entertainment that is popular in my own country more than entertainment that I think is popular in many countries around the world
4 I don't enjoy most entertainment, whether it's traditionally popular in my own country or popular in many countries around the world

Furnishings

1 I prefer to have home furnishings that I think are popular in many countries around the world rather than furnishings that are considered traditional in my own country
2 I prefer mixing home furnishings that are traditional in my own country with furnishings that I think are popular in many countries around the world
3 I prefer to have home furnishings that are traditional in my country rather than furnishings that I think are popular in many countries around the world
4 I don't really like my own country's traditional home furnishings or furnishings that I think are popular in many countries around the world

Clothing

1 I like to wear clothing that I think is popular in many countries around the world more than clothing that is traditionally popular in my own country
2 I like to alternate or mix choices so that I wear clothing that is traditionally popular in my own country as well as clothing that I think is popular in many countries around the world
3 I like to wear clothing that is traditionally popular in my own country more than clothing that I think is popular in many countries around the world
4 I don't care whether you're talking about the traditional clothing in my own country or clothing that I think is popular in many countries around the world, I am not interested in clothing

Food

1 I enjoy foods that I think are popular in many countries around the world more than my own country's traditional foods
2 I enjoy my own country's traditional foods as well as foods that I think are popular in many countries around the world

3 I enjoy my own country's traditional foods more than foods that I think are popular in many countries around the world

4 I don't really enjoy my own country's traditional foods, nor do I enjoy foods that I think are popular in many countries around the world

Lifestyle

1 I prefer to have a lifestyle that I think is similar to the lifestyle of consumers in many countries around the world rather than the traditional lifestyle in my own country

2 I prefer to blend the traditional lifestyle in my own country with a lifestyle that I think is similar to the lifestyle of consumers in many countries around the world

3 I prefer to have a lifestyle that is traditional in my own country rather than one that I think is similar to the lifestyle of consumers in many countries around the world

4 To be honest, I don't find the traditional lifestyle in my own country or the consumer lifestyle that is similar in many countries around the world very interesting

Brands

1 I prefer to buy brands that I think are bought by consumers in many countries around the world rather than local brands that are sold only in my country

2 I prefer to buy both local brands that are sold only in my country and brands that I think are bought by consumers in many countries around the world

3 I prefer to buy local brands that are sold only in my country rather than brands that I think are bought by consumers in many countries around the world

4 I couldn't care less about the countries associated with any brand, brand names mean nothing to me

For each consumption domain, we asked respondents to place a tick in front of the one statement that best described their feelings For each domain, statements 1–4 are indicative of a positive AGP combined with a negative ALP, positive AGP/positive ALP, negative AGP/positive ALP, and negative AGP/negative ALP, respectively

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Ty Henderson & Neeraj Arora

Promoting Brands Across Categories with a Social Cause: Implementing Effective Embedded Premium Programs

Embedded premium (EP) promotions promise purchase-contingent donations to a social cause and are typically studied within a single category However, EP programs spanning multiple product categories and brands are widespread This research investigates fundamental questions regarding where and to what extent an EP promotion should be used in multicategory contexts Using experimental choice data from more than 3500 people in two studies, the authors examine multicategory EP programs in two distinct branding environments spanning a diverse house-of-brands portfolio or covering a multicategory product line that shares a common corporate brand name For the corporate brand context, the results show that EP effects in one category carry over to adjacent categories that do not have an EP association Greater multicategory EP prevalence does not enhance brand attractiveness beyond the effect of a single EP exposure For the house-of-brands context, there is an inverse relationship between brand strength and incremental gain from EP From a return-on-investment standpoint, EP promotions are more efficient than price promotions because they enhance brand preference and are relatively cheaper to deploy The results make a strong case for a more discriminating implementation of EP programs across brands and categories

Keywords umbrella branding, cause marketing, promotions, return on investment, brand portfolio, multicategory

Well-known companies are increasingly associating themselves with social causes across their business units, product categories, and brands For example, Procter & Gamble promotes Pampers diapers through its 1 Pack = 1 Vaccine for UNICEF campaign Prior research has described such purchase-contingent donations to a social cause as an "embedded premium" (hereinafter, EP) (Arora and Henderson 2007) and has focused primarily on a single category In this article, we investigate EP promotion programs that deploy the same EP appeal across multiple product categories Such multicategory EP programs typically exist in two distinct branding environments either spanning a diverse house-of-brands portfolio or covering a multicategory product line that shares a common corporate brand name An example of the former is Campbell's Labels for Education EP program to promote a diverse portfolio of brands, such as Prego pasta sauce and Pepperidge Farm Goldfish crackers An example of the latter is Dove, which might implement the same EP program across multiple categories in which the brand is present To the best of our knowledge, existing research is silent on how multicategory EP promotion programs such as these work

The goal of this article is to develop a better understanding of how EP programs operate in multicategory contexts The multicategory EP context is an important research area because it raises fundamental questions of cross-category synergies caused by possible EP carryover and additivity effects From the standpoint of effective EP program management, it is critical to identify brands and contexts that most benefit from an EP association The corporate brand and house-of-brands contexts are structurally dissimilar (Rao, Agarwal, and Dalhoff 2004), and we begin by presenting research questions within these two contexts Furthermore, because EP programs incur a significant financial cost, we contrast their efficiency with traditional forms of promotion By focusing on these core issues, we hope that our research provides specific guidance to brand mangers on where and to what extent such multicategory EP programs should be used

The first context we consider is an EP program in the presence of a multicategory corporate brand For example, when a company such as Unilever with a corporate brand such as Dove implements the same EP promotion program across different personal-care product categories, it raises questions of EP synergies, such as cross-category carryover

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and additivity (Krishna and Rajan 2009) Specifically, in this research, for an EP program in the presence of a corporate brand, we ask the following question Across categories, do EP-induced positive associations with a brand carry over to other categories that share the brand's name but do not have a direct EP? Furthermore, in the same corporate brand context we ask the following Does an EP association with the same brand in more than one category have an additive effect on EP program outcomes? In unpacking these questions, we connect to research on valuation for public goods (Baron and Greene 1996), cross-category spillover in umbrella branding (Erdem and Sun 2002), and association transfer in brand extensions (Loken and John 1993) The answers to our carryover and additivity questions have substantive implications for where and to what extent an EP is used within a multicategory corporate brand context

In the second context, we examine an EP program implemented within a house of brands across categories Campbell's Labels for Education (www labelsforeducation com) is an example of an EP program implemented across the company's house of brands (e g , Prego, V8, Pepperidge Farm) in diverse product categories In such a situation, with different brands in different product categories, questions arise regarding relative EP effectiveness by category For an EP program in the presence of a house of brands, we ask the following Does relative brand strength calibrate the effectiveness of an EP program across different categories? Linking to the cross-category (Ainslie and Rossi 1998) and promotions (Grover and Srinivasan 1992) literature streams, we explore the role of category-specific relative brand strength as a determinant of multicategory EP program effectiveness Answering this question provides insight into which brands in the portfolio might benefit most from the EP program

Beyond understanding the critical interplay between an EP program and the corporate brand/house-of-brands contexts, it is important to contrast an EP's effectiveness with traditional forms of promotion For managers with return-on-investment (ROI) concerns, a deeper understanding of how an EP works requires an assessment of relative promotion efficiency in relation to other promotions Price promotions provide one such relevant baseline In juxtaposing EP and price promotions, we ask the following question From an ROI standpoint, is an EP program more efficient than traditional price promotions, such as coupons? Investigating this issue illuminates key conceptual distinctions between EP programs and price promotions that could have real financial consequences

To investigate these research questions, we employ a multimethod, mixed-factor experimental and survey-based approach We conduct two studies involving more than 3500 people from a national sample We use experimental choice data obtained from the studies to provide answers to the aforementioned research questions The statistical machinery we adopt is a hierarchical Bayes conjunctive choice model (Gilbride and Allenby 2004, 2006) This methodological choice was guided by the premise that an EP promotion can be deeply personal (e g , a breast cancer association) for a segment of the population and likely results in noncompensatory brand evaluations For example, some people may consider a brand only when it possesses an EP and may drop it from consideration when it lacks an EP A conjunctive choice model, a fairly general form of noncompensatory choice model that nests a compensatory model, is well suited for the purposes of this research

In our empirical context of a corporate brand and multicategory EP program, we find evidence of the lingering carryover effect of an EP–brand association The positive effect of an EP association in one category persists into other categories that feature the same corporate brand but lack the EP Importantly, in the same corporate branding context, additional EP–category instantiations do not enhance brand perceptions beyond the effect of an EP in a single category This nonadditive response suggests that the presence of an EP association rather than its prevalence is what matters For an EP program operating in a house-of-brands context, we detect the critical role of relative brand strength on EP effectiveness This result implies that an EP program is most likely to benefit brands in commoditized or highly competitive categories Although the observed relationship between relative brand strength and promotion effectiveness also holds for traditional price promotions, we find important distinctions regarding perceived value that speak to superior ROI for EP promotions in relation to price promotions

We divide the remainder of this article into several sections The next section provides conceptual development and hypotheses for our central research questions The following section specifies the conjunctive choice model used to test the hypotheses Then, we include sections that describe the empirical context and the results from the two studies A concluding section discusses the limitations and managerial implications of this research

Conceptual Development and Hypotheses

Embedded premium promotions are a topic of great interest to senior management (Porter and Kramer 2006) and therefore are widely discussed in popular press (Zmuda and York 2010) Existing academic research in marketing has investigated how company–cause linkages are related to corporate reputation (Brown and Dacin 1997), firm intangible value (Luo and Bhattacharya 2006), and brand choice within a single product category (Barone, Miyazaki, and Taylor 2000) However, a gap remains with regard to multicategory EP programs operating in house-of-brands or corporate branding contexts This is the focus of the current article In this section, we review existing literature and develop hypotheses related to carryover, additivity, and relative brand strength for a multicategory EP program operating under either a corporate branding or a house-of-brands strategy In addition, an EP program offers some potential advantages over traditional forms of promotion Therefore, we offer conceptual development for unique perception and performance outcomes that distinguish other-focused EP promotions from self-focused price promotions Such distinctions help explain efficiency differentials between the two promotion types

EP Program in the Presence of a Corporate Brand

Just as a corporate brand facilitates economies of scale in marketing (Lane and Jacobsen 1995), a multicategory EP may likewise enable cross-category leveraging of EP benefits. Economies of scale with a corporate brand are achieved because the benefits of any brand-related marketing investments are shared across all products and categories that carry the same brand name. Brand extension research shows that associations with the parent brand can transfer to a new brand extension (Loken and John 1993). Umbrella branding research demonstrates that a common brand name across products serves as a credible signal of expected quality for a new product (Wernerfelt 1988) and that advertising and marketing-mix activities for a brand in one category can spill over into a related product category with a common brand name (Erdem and Sun 2002). Despite this established principle, no existing research has investigated the potential cross-category spillover effects of an EP promotion in a multicategory corporate brand context.

Research on single-category EP promotions has shown that such promotions can positively shift brand perceptions and alter brand choice behavior, particularly when the brand is relatively unknown (Arora and Henderson 2007, Barone, Miyazaki, and Taylor 2000). Embedded premium programs often maintain unique associations between brands and causes, thus, they can act as points of differentiation, making brands more distinctive by enhancing not only the offer but also perceptions of the brand itself (Keller 2003). Under an EP promotion, individual schemas for the associated brand are positively tagged with the EP social cause affiliation (Murphy 1988). Do these positive associations carry over into contexts in which the same brand does not directly offer an EP promotion? Research on categorization (Cohen and Basu 1987, Rosch and Mervis 1975), brand extensions (Loken and John 1993, Park, Jun, and Shocker 1996), and umbrella branding (Erdem and Sun 2002) suggests that the likely answer is yes.

Because of the positive EP–brand association tagging, we expect the carryover effect to spread from an EP-associated brand in one category to the same brand in another category. The extent of this cross-category carryover may depend critically on the perceived similarity of the product categories (Boush and Loken 1991), the atypicality of the brand name (Aaker and Keller 1990), the mood (Barone, Miniard, and Romeo 2000), and thinking styles (Yorkston, Nunes, and Matta 2010) of the perceiver. Building more broadly on the positive tag schema enhancement argument (Smith et al. 1988), we expect that an EP-associated brand in one category will experience a carryover effect in a subsequent category in which the EP association is absent. This leads to the following hypothesis

> H_1 For a given brand in a category, positive EP-related effects carry over into other categories that share the same brand name but do not have a direct EP association.

In the corporate brand context, an EP–brand association can appear across multiple categories that all share the same brand name. This raises the following question. Are multiple EP–brand associations across several different categories more effective than a single EP–brand association? We define exposure to multiple category instantiations of the EP as the extent of EP prevalence, and we examine whether there is an additive response to increased EP prevalence. In a single-category EP context, it has been suggested that the mere presence of an EP rather than its magnitude is sufficient to induce changes in choice behavior. Empirical evidence demonstrates that people are relatively insensitive to changes in EP intensity (Arora and Henderson 2007, Strahilevitz 1999) and that increasing the level of the promised charitable donation has no appreciable impact on brand perceptions or choice behavior. Although EP intensity and EP prevalence are not strictly analogous, the insensitivity to the EP level result suggests a potentially nonlinear response to increased EP prevalence. More generally, research on contingent valuation of public goods shows that people are value insensitive to both the scope and the level of the related public good (Baron and Greene 1996, Baron and Spranca 1997, Kahneman and Knetch 1992). In particular, valuation is not additive. Willingness to pay for two public goods together is less than willingness to pay for each good separately (Diamond and Hausman 1994).

Aside from increasing awareness for an unknown brand, EP promotions have limited informational content about the brand itself, but they may still influence brand perceptions (Brown and Carpenter 2000). The persuasive power of an EP promotion lies in its distinctive combination of public and private good. Complementarity between the EP message and the promoted brand can enhance utility for the experience good (Becker and Murphy 1993). That such utility may depend more on affective components of the offer and less on the offer itself (Zajonc and Markus 1980) suggests that the mere presence of an EP–brand association in just one category rather than its prevalence across categories can be sufficient to trigger positive responses in other categories that feature the same brand without the EP association.

Other evidence also suggests that the bulk of an EP's effect is likely to be realized in a single-category instantiation. The EP stimulus is likely to attract attention because people are motivated to learn about novel stimuli (Sujan 1985), particularly with an unknown brand (Campbell and Keller 2003). Furthermore, unlike other functional aspects of a brand, the social cause association can be deeply personal for a segment of the population (Irwin and Baron 2001). As such, the affective response toward the brand with an EP is likely to be amplified for people with strong affinity to the social cause (Barone, Norman, and Miyazaki 2007). Because participation in the public good from EP may be more important to people than actual outcome quantity (Baron and Spranca 1997), we expect that the EP carryover effects will be nonadditive. That is, if the mere presence of a single EP–brand association is sufficient to trigger positive carryover effects, two category instantiations of the EP–brand association are unlikely to yield an effect that is twice as strong. Formally, we hypothesize the following

> H_2 Compared with a single EP–brand association (low prevalence), multiple EP-related brand associations (higher prevalence) have no incremental carryover effect in cate-

gories without a direct EP association but that share the same brand name

EP Program in the Presence of a House of Brands

Although they are owned by a common corporate parent, the assortment of brands across different product categories in a house-of-brands brand portfolio can vary significantly in their positioning and individual brand equity (Rao, Agarwal, and Dalhoff 2004) For example, Campbell's owns different brands in diverse categories, such as spaghetti sauce, soups, and snack crackers Brand choice and market share data show that different competitive structural realities exist across categories in the marketplace (Hansen, Singh, and Chintagunta 2006) At issue in a house-of-brands–EP context is the potentially divergent outcomes that the same promotion can deliver across distinct brands in unique competitive contexts

Empirical evidence on the topic of differences in promotion effectiveness exists For example, promotion effectiveness is known to be heterogeneous across individuals (Rossi and Allenby 1993) Across categories, existing research shows that people react similarly to price-based promotions (Ainslie and Rossi 1998), thus, promotion sensitivity is described as a trait that is consistent across categories Existing cross-category research has also examined preference commonalities (Singh, Hansen, and Gupta 2005), state dependence (Seetharaman, Ainslie, and Chintagunta 1999), and purchase incidence (Manchanda, Ansari, and Gupta 1999) across product categories Hoch and colleagues (1995) show that the store-level contextual effect is an important determinant of cross-category price sensitivity Similar empirical evidence for EP effectiveness across categories is missing

Despite evidence for strong cross-category promotion sensitivity correlation, it remains unclear how an EP promotion will work when a multicategory firm implements the same EP program for different brands across various categories Because the same promotion is linked to a variety of brands, differences in the relative strength of those brands caused by the nature of competition in the category and company brand positioning efforts can lead to significant variation in cross-category promotion effectiveness Thus, a fundamental question in the house-of-brands context is, How will different brands react under an EP program, and which brands will benefit the most from an EP association? This is an important question because the answer likely provides guidance to house-of-brands companies (e g , Procter & Gamble, Kraft) engaged in an EP program All else being equal, relatively strong brands may not realize significant effects of a cross-category EP program because the incremental utility associated with the EP may be immaterial to brand choice outcomes (Grover and Srinivasan 1992) However, in competitive situations, such as commoditized categories or duopoly competition, in which a brand does not enjoy a tangible differential advantage, an EP promotion is likely to offer greater gains This is consistent with Barone, Miyazaki, and Taylor (2000), who show that cause-related marketing is likely to be more effective under the conditions of "interbrand homogeneity" or low relative brand strength We hypothesize the following

H_3 For an EP program in the presence of a house of brands, higher relative brand strength results in lower EP effectiveness

ROI: EP Versus a Financial Incentive

After carefully examining the interplay between an EP program and the corporate brand/house-of-brands contexts, we wanted to evaluate EP programs from an ROI standpoint This justification becomes necessary for a brand manager because EP promotion expenditures likely compete for resources with other forms of promotion Therefore, an ROI-based contrast between an other-focused (e g , EP) promotion strategy and a self-oriented (e g , coupon) approach is of conceptual and substantive interest Although existing research has examined the effectiveness of both coupon and EP promotion strategies together (Arora and Henderson 2007, Barone, Miyazaki, and Taylor 2000), we know far less about the comparative efficiency of these types of programs In assessing promotion ROI, we not only incorporate cost in the efficiency calculation but also directly assess the value that people ascribe to each distinct promotion strategy We can assess value by determining the price cut equivalent of both a coupon and an EP promotion, adjusted for face value (Meijer and Rouwendal 2006)

While both self- and other-focused promotions are dollar denominated (e g , 55¢ coupon and 15¢ to Red Cross), EP promotions typically have a lower face value (e g , 15¢) than coupons (e g , 65 5¢ average for grocery products, NCH Marketing 2000) Existing research shows that a small-denomination 15¢ EP has a greater impact on individual behavior than a comparable 15¢ coupon and that increasing the EP payout level does not necessarily translate into stronger effects (Arora and Henderson 2007, Strahilevitz 1999) In this research, we use valuation-based measures of relative promotion effectiveness to draw distinctions between these self- and other-focused promotion strategies at more typical (e g , 10¢ EP and 55¢ coupon) denomination levels These inferred measures help us answer the following question Adjusted for face value, is the price cut equivalent of a coupon different from that of an EP? Conceptually, the self and other value functions may be different We highlight some perspectives on valuation that lead to our final hypothesis

Product attributes that incorporate collective benefit implicate both psychological (Batson et al 1981) and economic (Kotchen 2005) perspectives on valuation A unique source of value in an EP promotion is the potential public good that can accumulate because of individual action By incorporating collective benefit into individual choice behavior, preference interdependence influences both individual valuation and social welfare Social choice suffers from the problems of quantification and coordination A person does not know what impact his or her behavior will have on the public good, nor does this person know if everyone else is doing their part (Sen 1977) In an environment of imperfect information, a person is guided by his or her perceptions of others' actions, and these perceptions can affect EP attractiveness. Rather than free riding on the public goods generated by the actions of others (Cornes and Sandler 1984), a bandwagon (Leibenstein 1950) or conditional cooperation (Frey and Meier 2003) perspective on social choice suggests that greater perceived contributions to the public good by others create a positive feedback loop. Increased perceived participation translates into larger anticipated payouts, which encourage greater personal commitment and enhance perceived value. Because coupon redemption is primarily an individual behavior, it lacks the community aspect that is unique to an EP.

In addition, invoking the social cause in an EP transaction brings a person's valuation of that public good to bear. Research on the contingent valuation of public goods finds that people routinely overvalue their worth (Baron 1997). Therefore, the overall value of an EP includes not only the perceived economic value of the charitable contribution but also incremental transaction utility—often described as "warm glow" (Andreoni 1990) or "moral satisfaction" (Kahneman and Knetch 1992). Because EP promotions are less common than ubiquitous coupons, this novelty may be salient in a "badge-of-honor" sense, thus amplifying the moral satisfaction available for purchase, particularly given the cultural milieu of social responsibility (Franklin 2008). Overall, because the EP value function can include additional nonprice components, we hypothesize the following:

> H_4: EP promotions have a greater price-cut equivalent value than coupons.

The Statistical Model Used to Test the Hypotheses

Researchers have long noted that some people are often noncompensatory in their evaluations (Dawes and Corrigan 1974, Gigerenzer and Goldstein 1996, Hauser and Wernerfelt 1990, Roberts and Lattin 1991). An EP promotion is unique because its social cause association (e.g., Susan G. Komen) can be deeply personal for a segment of the population and can result in noncompensatory evaluations. In decisions involving emotion-laden attributes, such as EP, research shows that people use choice heuristics that favor maximizing the emotional attribute at the expense of accuracy (Drolet and Luce 2004, Luce, Payne, and Bettman 1999). Qualitative data also indicate that some people may focus on EP attributes, eliminating from their consideration set alternatives that lack the attribute (Webb and Mohr 1998).

Despite evidence to the contrary, most research on promotions in general (Neslin 2002, p. 14) and EP in particular (Arora and Henderson 2007, Barone, Miyazaki, and Taylor 2000) has adopted compensatory models of consumer choice. Guided by our research questions, we adopt a noncompensatory conjunctive model of consumer choice to test our hypotheses. Recent modeling innovations (Gilbride and Allenby 2004, 2006, Jedidi and Kohli 2005, Yee et al. 2007) provide methodologies to estimate such noncompensatory models. The basic premise of a two-stage noncompensatory conjunctive model is that an alternative must first be acceptable on all relevant attributes for it to be considered. Importantly, a conjunctive model nests a compensatory model and therefore is more general. The conjunctive model fits individual choice data better than a variety of other compensatory and noncompensatory models (Gilbride and Allenby 2004). Next, we formalize our specification of the conjunctive model used in our experimental settings to formally test H_1–H_4.

Model Specification

We assume that a given person evaluating k ($k = 1, \ldots, K$) alternatives within a choice set chooses alternative k′. Each alternative k has a design vector x_k indicating the presence or absence of attribute levels. The deterministic part of utility $V_{k'}$, linear in the predictor variables ($x'_{k'}$, β), with an i.i.d. Type I extreme value error structure, yields a multinomial logit model (McFadden 1974). To capture the noncompensatory evaluation process, we include a parameter (τ_m) for each attribute level m ($m = 1, \ldots, M$) (Gilbride and Allenby 2006). An indicator function $\mathbf{I}(x_k, \tau)$ governs the inclusion of an alternative in the consideration set as follows:

$$(1)\quad \Pr(k') = \Pr\left[V_{k'} + \varepsilon_{k'} > V_k + \varepsilon_k\ \forall\ k \text{ such that } \mathbf{I}(x_k, \tau) = 1\right],$$

where

$$\mathbf{I}(x_k, \tau) = \begin{cases} 0 \text{ if } \sum_{m=1}^{M} (\tau_m \times x_{km}) > 1 \\ 1 \text{ if otherwise} \end{cases}$$

Person-specific τ is a ($M \times 1$) vector. Each element $\tau_m \in \{0, 1\}$ of the τ vector is the binary attribute screening parameter to be estimated, and $x_{km} \in \{0, 1\}$ is a dummy-coded variable indicating if alternative k has attribute level m. In the presence of an attribute level m in alternative k ($x_{km} = 1$), the parameter $\tau_m = 1$ indicates screening on that attribute level; here, screening means that the attribute level is unacceptable and alternative k is not considered, while $\tau_m = 0$ means no screening on that attribute level. Adding the screening parameters τ_m controls the indicator function that partitions the error space and results in the following expression for choice probability (Gilbride and Allenby 2006):

$$(2)\quad \Pr(y_{k'} = 1) = \frac{\exp(x'_{k'}\beta)}{\sum_{k=1}^{K} \mathbf{I}(x_k, \tau)\left[\exp(x'_k\beta)\right]}.$$

We jointly model a person's attribute sensitivity (β_h) and noncompensatory screening parameters (τ_h). To illustrate operationalization of the screening and attribute sensitivity parameters in an EP promotion context, consider a situation in which two brands, A and B, compete in a category, and only Brand A has an EP program. Separate screening parameters can be estimated for Brand A when it appears with an EP promotion ($\tau_{A \text{ with EP}}$) and when it lacks the EP attribute ($\tau_{A \text{ without EP}}$). This parameterization captures a consideration effect due to the EP promotion. Such consideration effects can be estimated across promotion types, experimental conditions, and categories. We illustrate this approach in greater detail in the next section.

However, consideration in a two-stage conjunctive model does not guarantee choice For alternatives that are included in the consideration set, brand sensitivity parameters (β_A and β_B in our example), along with attribute sensitivity parameters of nonbrand attributes, jointly determine choice as the compensatory portion of the model comes into play The two-stage model enables us to study both compensatory and noncompensatory EP effects Because a compensatory model is a special case of the conjunctive model, we capture decision type heterogeneity across individuals That is, we are able to distinguish people who exhibit a noncompensatory evaluation process for an attribute from those who are compensatory

Attribute sensitivity heterogeneity across individuals is introduced hierarchically with a random-effects specification for the distribution of attribute sensitivities as follows $\beta_h \sim N(\bar{\beta}, V_\beta)$ Across respondents, the probability that person h screens out alternatives with attribute level m is an independent Bernoulli trial $\Pr(\tau_{hm} = 1) \sim \text{Bernoulli}(\theta_m)$, where θ_m captures the proportion of people who screen out alternatives with attribute m

Capturing Experimental Effects

To accommodate between-subject differences due to experimental factors and to test the hypotheses, we systematically shifted hyperparameters in the model using treatment covariates in a seemingly unrelated regression framework (Rossi, Allenby, and McCulloch 2005, p 65) We systematically shift the brand sensitivity and brand screening parameters with the matrix Z, which contains 0/1 elements to detect differences between experimental conditions as follows

$$\bar{\beta} = Z'\delta, \text{ and} \tag{3}$$

$$\theta = \frac{\exp Z'\gamma}{1 + \exp Z'\gamma} \tag{4}$$

Here, the δ and γ hyperparameters capture the incremental effect of an experimental treatment relative to a baseline (e g , a control condition) In our empirical application, we use δ and γ to capture brand-specific effects as they relate to EP and H_1–H_4 We use the former to capture brand attractiveness effects and the latter to capture consideration effects

We illustrate the operation of this statistical machinery with a simple example Consider a study in which people in a treatment condition are exposed to an EP promotion stimulus while people in a control condition are not The covariate matrix in this example has two elements Z_0 captures the baseline preference for the EP-linked brand, and Z_{EP} captures the incremental effect of the EP treatment on the brand People in the control condition have their indicator variables set to 1 only for the common brand intercept ($Z_0 = 1$, $Z_{EP} = 0$), and people in the treatment group have their indicator variables set to 1 for both the brand intercept and the EP treatment ($Z_0 = 1$, $Z_{EP} = 1$) The first element δ_0 of the (2×1) δ vector captures baseline brand preference, and the second element δ_{EP} captures brand preference differences because of an EP

We test the hypotheses by evaluating the empirical distribution of the posterior estimates (Rossi, Allenby, and McCulloch 2005, p 16) If the posterior distribution of δ_{EP} is positive and does not include zero, it indicates that, because of the EP stimulus, brand attractiveness of the EP experimental group is higher than that of the control group Similarly, if the posterior distribution of γ_{EP} is negative and does not include zero, it indicates that brand consideration in the EP group is higher than that in the control group We report "prob," the probability of parameter estimates different from zero, which can be viewed as the Bayesian equivalent of a *p*-value We describe details of the estimation algorithm and operationalization of study-specific treatment covariates in the Technical Appendix

Study 1

The purpose of Study 1 was to carefully investigate carryover and additivity effects of an EP program across multiple categories that share the same corporate brand We use a nationally representative sample for this study We used three personal care product categories in Study 1 shampoo, body wash, and lotion Each category had the same four corporate brands Personal care products offer a realistic setting for the study because these are product categories with relatively high penetration rates, and several brands in the competitive space actually have corporate branding strategies across the categories (e g , Dove, Suave, Neutrogena, Gillette)

Study 1 Design

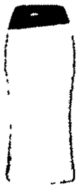
We recruited participants in Study 1 from a national online panel and included them in a two between-subjects factors and one within-subject factor mixed-factor experimental design Respondents completed a conjoint choice task in each of the three product categories, answered a battery of perceptual questions about the brands and product categories, and completed a demographic profile In keeping with the idea of corporate branding, the four brand names in the study (White Rain, Flex, Equate, and de~luxe) were the same across all three product categories (shampoo, body wash, and lotion) The focal brand for this study, as we explain next, was de~luxe In total, 530 respondents, broadly representative of sex (61 7% female), marital status (59 6% married), age (45 7% aged 35–54), and affluence (31 5% household income > $75,000) completed Study 1

After they passed category usage screening criteria, we randomly assigned participants to one of five conditions that varied by a self–other promotion payoff factor (EP or discount) and promotion prevalence factor (one category or two categories) We included the EP/discount payoff factor to compare effects across different promotion types In the one-category promotion prevalence condition, depending on the level of the payoff factor, respondents saw either a discount or an EP association for the de~luxe brand in just the shampoo product category but not in subsequent body wash and lotion categories In the two-category promotion prevalence condition, the EP or discount association was present in both the shampoo and the body wash categories but not in the final lotion category The fifth condition serves as the control condition—without an EP or a discount promotion association for the de~luxe brand in any of the three product categories Text and visual stimuli (as displayed in Table 1) were identical across the five experimental conditions, except that the second text descriptor for the de~luxe brand varied according to the assigned experimental condition, as we show at the bottom of Table 1

Study respondents answered ten choice-based conjoint questions per category Each choice task had four brand alternatives White Rain, Flex, Equate, and the focal brand de~luxe We described these brand alternatives using the text and visual stimuli shown in Table 1 In addition to brand, the conjoint design included four price levels ($2 50, $2 65, $2 80, and $2 95) and a binary extra moisturizing/regular formula moisturizing attribute In total, each respondent made 30 choices across the three product categories We estimated brand attractiveness and consideration effects in Study 1 using the conjunctive choice model

The final lotion category (see Table 1) offers the cleanest test of carryover and additivity effects because though the lotion category task and brand stimuli are identical across all conditions, respondents in each of the five conditions were exposed to different brand promotion messages in previous product categories If there are carryover effects from an EP promotion association, de~luxe brand attractiveness and consideration in the lotion category should be higher in the EP treatment conditions than in the control condition If there is an additive effect of multiple category EP exposures, de~luxe brand attractiveness and considera-

TABLE 1
Study 1 Stimuli

	Shampoo	**Body Wash**	**Lotion**
			
White Rain	Replenishes hair to maintain health, strength, and shine **The right shampoo for hair that will get noticed.**	Actively works to refresh and replenish skin with nutrients and minerals **Delivers clean, comfortable feeling skin that lasts all day**	Antioxidant-rich formula tones and revitalizes lackluster skin **For healthy skin that shines with a healthy radiance**
FLEX	Fortifies, nourishes, and protects from the inside out **Shampoo inspired by nature and grounded in science.**	Engineered with the right balance of body cleansers and skin conditioners **Go one step beyond any clean you've ever known.**	Clinically proven to condition, strengthen, and rejuvenate skin **Visibly improve your skin's appearance in just one use.**
equate®	Cleanses and invigorates hair for a healthy balance **For healthy hair that shines with all its strength**	Uniquely formulated to reveal all your skin's natural health and beauty **Revitalize your skin to reveal a more radiant you.**	Replenishes key nutrients essential for healthier looking skin **Recharge your skin and boost all its natural defenses.**
de~luxe	For hair that is renewed, refreshed, and ready-to-go **[INSERT TEXT]**	With ingredients designed to renew your skin and fuel your senses **[INSERT TEXT]**	Advanced formula awakens, enlivens, and transforms tired skin **[INSERT TEXT]**
	Treatment-Specific de~luxe Brand Description Text		
Control	**Great hair starts here, just turn on the shine**	**An intense clean that leaves your body feeling refreshed.**	**Do something good for yourself and your skin everyday.**
EP1	**10¢ of each purchase donated to American Red Cross.**	**An intense clean that leaves your body feeling refreshed.**	**Do something good for yourself and your skin everyday.**
EP2	**10¢ of each purchase donated to American Red Cross.**	**10¢ of each purchase donated to American Red Cross.**	**Do something good for yourself and your skin everyday**
Discount1	**10¢ price discount taken at time of your purchase.**	**An intense clean that leaves your body feeling refreshed**	**Do something good for yourself and your skin everyday.**
Discount2	**10¢ price discount taken at time of your purchase.**	**10¢ price discount taken at time of your purchase.**	**Do something good for yourself and your skin everyday.**

tion in the lotion category for the EP2 condition should be even higher

Study 1 Results

We estimated a three-category conjunctive choice model that includes relevant treatment covariates The model includes three brand sensitivity parameters (Equate = 0), a price parameter, a moisturizing parameter, and four brand screening parameters in each of the three categories for a total of 15 individual-level attribute sensitivity and 12 screening parameters The noncompensatory model offers a better fit to the data than a reference multinomial logit compensatory model (deviance information criterion [DIC] 10,617 3 versus 13,643 5), and the posterior means for the noncompensatory model hyperparameters appear in Table 2

The positive and significant EP coefficient ($\delta = 1\ 896$, prob > 95) for de~luxe brand shampoo in the first column of Table 2 shows that an EP association increases brand attractiveness for the de~luxe brand in the category with the actual EP promotion We do not find any increase in brand consideration because of an EP ($\gamma = -062$, prob < 95) Recall from Equation 4 that $\theta = \exp Z'\gamma/(1 + \exp Z'\gamma)$ For ease of interpretation, we report the parameter γ in terms of a consideration shift So $\gamma = -062$ means reduced screening, or an increase in brand consideration Furthermore, because prob < 95, this increase in brand consideration is not significant To assess the combined impact of changes in both brand attractiveness and consideration, in Table 2, we also report the incremental effect of EP in terms of choice probability gain We calculated this incremental effect over the posterior distribution of model parameters and assume no difference in brands on the remaining attributes (price and moisturizing) We find that relative to the baseline de~luxe choice probability of 106, the EP more than doubles choice probability for the de~luxe brand, with an incremental choice probability gain of 127 (prob > 95) This focal category EP promotion effect is a necessary precondition for potential carryover and additivity effects

We also report incremental changes to brand attractiveness and brand consideration coefficients across categories for the price discount conditions in Table 2 Consistent with existing EP research (Arora and Henderson 2007, Strahilevitz 1999), we find no evidence of a price discount effect for the de~luxe brand ($\delta = -264$, prob < 95, $\gamma = -101$, prob < 95) when the price cut is small (i e , 10¢), thus ruling out any possible discount carryover effects

In support of H_1, the positive and significant EP carryover coefficient in the lotion category ($\delta = 1\ 803$, prob > 95) shows that de~luxe brand lotion is more attractive to people who previously saw that brand with an EP association in a different category than to other people who never saw an EP association for de~luxe Although we find only a marginal gain in consideration effects because of EP carryover ($\gamma = -105$, prob > 85), the collective impact of both attractiveness and screening parameters on choice probability is significant On average, people who previously saw a de~luxe EP association have de~luxe brand lotion choice probabilities that are 083 higher (prob > 95) than if they had never seen the EP association This result demonstrates that EP has a lingering salutary effect on brand choice even in its absence Bearing in mind that the baseline de~luxe brand lotion choice probability is 099, the incremental effect of EP carryover is considerable

In support of H_2, we find no incremental effect on brand attractiveness and consideration of multiple EP promotion instantiations relative to just one EP exposure This is evident in the null result for "incremental effect of EP prevalence" in the lotion category ($\delta = 029$, prob < 95, $\gamma = -057$, prob < 95) Furthermore, the combined impact of these two parameters, which captures the incremental effect of increased EP prevalence on choice probability for the de~luxe brand, is also not significant (038, prob < 95) This result indicates that people who were exposed to an EP–brand association in only the shampoo category find a de~luxe branded lotion offering as attractive as people who were exposed to EP–brand associations in both the shampoo and the body wash product categories The implication of this finding is that by leveraging the common EP–corporate brand association, a limited deployment of EP promotions across categories may be as effective as a more extensive rollout, but at a lower cost We revisit this issue of free riding in a corporate branding EP program in the "Managerial Implications" section

We can also use the results for the body wash category to test the carryover and prevalence hypotheses If people who saw only a de~luxe EP in the shampoo category have greater de~luxe brand body wash attractiveness than the control condition, this would provide evidence that the positive influence of the de~luxe shampoo EP association carries over into the body wash category The positive and significant EP carryover coefficient for brand attractiveness ($\delta = 1\ 523$, prob > 95) and enhanced brand choice probability (094, prob > 95) in Table 2 provides additional support for H_1 Furthermore, if people who saw only a de~luxe shampoo EP association have similar de~luxe brand body wash attractiveness compared with people who saw both de~luxe shampoo and de~luxe body wash EP associations, this would provide evidence of a nonadditive EP effect The results in Table 2 show that the incremental carryover effect of a de~luxe shampoo EP alone on de~luxe brand body wash choice probability (094, prob > 95) is not different (prob < 95) from the incremental effect of a body wash EP on de~luxe brand body wash choice probability (112, prob > 95), providing further support for H_2 In our design, because the group receiving the de~luxe body wash EP treatment also previously saw a de~luxe shampoo EP association, the incremental effect of a body wash EP ambiguously contains de~luxe shampoo EP association carryover effects Additional conditions would be necessary to clarify the direct EP and indirect EP carryover effects on the de~luxe brand in the body wash category per se As such, the results for the lotion category provide the most straightforward test of our hypotheses

An implicit assumption of the EP carryover effect is that the EP association influences overall brand evaluations We collected stated measures of overall de~luxe brand perceptions, such as brand quality, from respondents at the end of the study, this provides us with the opportunity to evaluate the findings using measures from outside the choice model

TABLE 2
Study 1 Attribute Sensitivity, Brand Screening, and Choice Probability Results

	Shampoo	Body Wash	Lotion
Attribute Sensitivity			
Price	**– 103** (– 126, – 081)	**–.137** (– 162, – 112)	**–.161** (– 191, – 134)
Extra moisturizing	**1.045** (719, 1 388)	**2 309** (1 893, 2 738)	**3.423** (2 910, 3 960)
White Rain	269 (– 330, 820)	– 107 (– 928, 701)	**–1.063** (–2 089, – 145)
Flex	430 (– 078, 977)	203 (– 457, 887)	311 (– 492, 1 086)
de~luxe	**–2.326** (–3 510,–1 160)	**–2.736** (–4 340,–1 404)	**–3.866** (–5 413,–2 482)
$\delta_{de\sim luxe}$			
Incremental effect of EP	**1.896** (647, 3 230)	**1.491** (082, 3 009)	
Incremental effect of EP carryover		**1.523** (072, 3 212)	**1.803** (364, 3 458)
Incremental effect of EP prevalence			029 (– 842, 836)
Incremental effect of discount	– 264 (–1 629, 1 049)	– 535 (–1 964, 906)	
Incremental effect of discount carryover		– 880 (–2 307, 507)	–1 402 (–1 937, 111)
Incremental effect of discount prevalence			374 (–1 836, 1 087)
Brand Consideration			
White Rain	**111** (072, 156)	**.029** (012, 052)	**083** (050, 123)
Flex	**098** (064, 132)	**094** (062, 131)	**.089** (060, 121)
Equate	**.082** (048, 122)	**.073** (031, 096)	**.075** (047, 113)
de~luxe	**.242** (137, 367)	**.060** (023, 132)	**.236** (131, 356)
$\gamma_{de\sim luxe}$			
Incremental effect of EP	– 062 (– 186, 057)	– 037 (– 102, 019)	
Incremental effect of EP carryover		001 (– 065, 090)	– 105 (– 238, 030)
Incremental effect of EP prevalence			– 057 (– 189, 058)
Incremental effect of discount	– 101 (– 250, 038)	– 044 (– 114, 008)	
Incremental effect of discount carryover		– 035 (– 100, 030)	– 079 (– 232, 062)
Incremental effect of discount prevalence			– 059 (– 194, 080)
Choice Probability			
de~luxe	**.106** (082, 136)	**.151** (123, 182)	**.099** (070, 131)
$Pr_{de\sim luxe}$			
Incremental effect of EP	**.127** (096, 156)	**.112** (070, 151)	
Incremental effect of EP carryover		**.094** (059, 129)	**.083** (046, 116)
Incremental effect of EP prevalence			038 (– 003, 076)
Incremental effect of discount	016 (– 018, 045)	– 016 (– 051, 021)	
Incremental effect of discount carryover		003 (– 030, 037)	034 (– 006, 076)
Incremental effect of discount prevalence			– 021 (– 056, 015)

Notes Table presents posterior means (95% highest posterior density) Bold entries indicate that 95% highest posterior density does not include zero itself Because prior research has implicated a role for cause affinity in determining EP outcomes (Barone, Norman, and Miyazaki 2007, Sen and Bhattacharya 2001), we also included affinity toward the Red Cross in the stated-measures analysis[1] In support of the EP carryover effect, in general, people exposed to an EP association have greater overall quality perceptions for the de~luxe brand ($p < 10$) In addition, increased EP category prevalence has no significant impact on de~luxe brand quality ratings ($p > 20$) Overall, the results show that though cause affinity has no main effect on quality ratings ($p > 20$), it may amplify the EP carryover effect We find that an EP association significantly enhances de~luxe brand quality perceptions as affinity toward the EP-linked charity increases ($p < 05$)

In summarizing Study 1, for a corporate brand with an EP association, there are carryover effects into categories that share the same corporate brand name The corporate brand remains more attractive and has a higher choice probability even when the direct EP association goes away This positive carryover effect is not enhanced by multiple category instantiations This suggests that the mere presence of an EP association, rather than its prevalence or scale, enhances brand perception In contrast to these observed EP carryover effects, an equivalent price discount does not alter brand attractiveness or consideration in either the actual promoted product category or the adjacent product categories Next, we examine the implications of an EP program in a house-of-brands context

Study 2

The purpose of Study 2 was to investigate the implications of a multicategory EP program implemented within a house-of-brands branding strategy (H_3) and to juxtapose value-related outcomes of EP promotions with those of comparable coupon promotions (H_4) We collected data for Study 2 with the aid of a multinational company that has an established EP program and maintains a house of brands across a broad spectrum of product categories We selected five different brands from the company portfolio across five distinct product categories found in a typical supermarket The brands are not substitutes and have similar average shelf prices We disguised the specific brands and product categories for confidentiality purposes

Aside from the corporate brand versus house-of-brands context difference, Studies 1 and 2 differ in another important way In contrast to Study 1, there are no between-subjects experimental factors in Study 2, only within-subject comparisons across categories and across promotion types The within-subject comparison across promotion types using an actual EP program is an important aspect of Study 2 that facilitates the evaluation of promotion effectiveness and efficiency at the individual level

Study 2 Design

We recruited Study 2 participants from a national online panel, with the qualification that they were over the age of 18, had purchased in the target product categories in the past six months, did at least 50% of their household's grocery shopping, and had children living in the household After this initial screening, 84% of participants who began Study 2 completed it, yielding the final sample size of 3041 Survey length precluded collecting data from all respondents for all five product categories After initial qualification, we randomly assigned respondents to two of the five product category tasks, which resulted in approximately 1200 respondents per category[2] In each assigned category, respondents completed category-specific measures and a 14-question conjoint choice experiment We used a similar experimental design with three alternatives per choice and actual product images across all five categories

Within each category, there were five attributes of interest, as we outline in Table 3 brand (three levels), price (five levels), and three binary attributes (55¢ coupon, product health claim, and 10¢ EP) Across categories, five different brands from the company's portfolio (shown to the respondents but disguised here as Brands A_1–A_5) appeared in the design along with five sets of competitor brands (B_1–B_5 and C_1–C_5) Brands C_1 and C_5 in the design were store brands The 55¢ coupon is the self-oriented price promotion with which the other-focused EP can be compared The noneconomic product health claim attribute differed by category and related to possible nutritional characteristics of products in that category, such as low sugar To maintain a unique association between the company's house of brands and the EP attribute and preserve ecological validity, the 10¢ EP was nested inside only Brands A_1–A_5 and was not associated with the competitor brands, B_1–B_5 and C_1–C_5, across categories For example, in Category 1, only Brand A_1 appeared both with and without an EP attribute across choice sets for that category task With the exception of this EP–Brand A_1–A_5 restriction, attributes could appear in any combination with the brands in the choice set

After completing the two assigned category tasks, respondents answered questions about EP program perceptions and behavior and provided a demographic profile We asked respondents about their awareness of several EP programs, their own EP program participation activity, and their perceptions of EP program participation rates within their community Because of the product category purchase, grocery shopping, and household profile screening requirements, the sample was predominantly female (85 7%), was of child rearing age (80 7% between the ages of 31 and 49), had larger-sized households (77 2% had households with 4+ members), and had high awareness of the EP program (95 1%) This profile is consistent with the demographic indexes for visitors to the specific EP program Web site, as reported by Quantcast com

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[1] We regressed a summed and standardized Red Cross affinity measure (Moore, Harris, and Chen 1995, $\alpha = 949$) along with EP treatment condition indicators and an EP–affinity interaction term on the de~luxe brand quality perception measure to account for (1) the effect of the EP treatment, (2) an additive effect of increased EP prevalence, (3) systematic scale use biases that would effect both the brand quality and affinity measures, and (4) any incremental EP treatment effect contingent on the level of Red Cross affinity

[2] Category assignment pairings were random, as was the order of category task completion

Study 2 Results

Instead of analyzing product categories in isolation (Kim, Srinivasan, and Wilcox 1999), we exploit the "missing completely at random" response pattern of the multicategory data set in which people provide data for two of the five categories to estimate a full multicategory model With a matched set of attributes across each category of interest, the multicategory hierarchical Bayes model makes use of all available information, employing data augmentation to estimate a full covariance matrix and a complete vector of hyperparameters for all attributes across all categories [3] We estimate six individual-level attribute sensitivity and eight screening thresholds in each of the five categories using both a noncompensatory conjunctive screening rule and a compensatory multinomial logit model Consistent with existing research (Gilbride and Allenby 2004), in-sample fit statistics for the conjunctive model show that it provides a better fit to the data than the reference model (DIC 61,179 8 versus 68,200 2), thus, we report the results from the noncompensatory model in Table 4

From the results, we find that the positive and significant EP attribute sensitivity coefficients across all five categories (1 151, 1 148, 1 478, 1 280, and 1 219, all prob > 95) demonstrate that an EP association enhances perceptions for each of the different brands in the company portfolio In addition to this compensatory effect, downward shifts in the brand screening proportion parameters across categories (– 023, – 025, – 047, – 018, and – 011, all prob > 95) show that an EP association also increases brand consideration Across the five categories, the results indicate that as many as 5% of people consider Brands A_1–A_5 only when they offer an EP promotion

Although the results show that, in general, an EP increases brand attractiveness and lowers brand screening, some categories and brands realize stronger EP effects, while others realize only modest gains To further investigate this discrepancy, using individual-level posterior distributions of both attribute sensitivities (β_h) and brand screening parameters (τ_h), we compute choice probabilities for Brands A_1–A_5 in four different policy scenarios The baseline scenario has all three brands in the category identically priced with no other binary attributes The three versions of the baseline scenario add one of the 10¢ EP, 55¢ coupon, or health claim attributes to Brands A_1–A_5 We report the incremental effects of each attribute on Brand A_1–A_5 choice probabilities at the bottom of Table 4 In comparing the aggregate incremental effect across categories, changes in choice probability from the EP association are highest for Brand A_3 in Category 3 (prob > 95) and lowest for Brand A_5 in Category 5 (prob > 95) These differences stem in part from the varying degrees of brand competitiveness across the five categories

Across categories, these five brands from the house-of-brands portfolio, A_1–A_5, exist in different competitive environments For example, Category 1 is characterized by two brands (A_1 and B_1) at relative parity, with the third brand C_1 ($\beta = 0$) lagging far behind Brand screening estimates show that 44% of people do not even consider brand C_1, bolstering the argument that Category 1 is a duopoly In Category 3, all three brand sensitivity hyperparameters are near zero, and brand consideration for all three brands is high, suggesting that differences between brand preferences are not large in this category In contrast, Brand A_5 dominates Category 5, with a large brand sensitivity hyperparameter and significant screening on competitor brands B_5 and C_5 Across the brand portfolio, Categories 1, 3, and 5, respec-

TABLE 3
Study 2 Choice Design Attributes

Attribute	Category 1	Category 2	Category 3	Category 4	Category 5
Brand[a]	A_1 B_1 C_1	A_2 B_2 C_2	A_3 B_3 C_3	A_4 B_4 C_4	A_5 B_5 C_5
Price[b]	$2 39 $2 69 $2 99 $3 29 $3 59	$1 49 $1 79 $2 09 $2 39 $2 69	$2 39 $2 69 $2 99 $3 29 $3 59	$2 39 $2 69 $2 99 $3 29 $3 59	$2 29 $2 59 $2 89 $3 19 $3 49
55¢ coupon inside	Present/ absent	Present/ absent	Present/ absent	Present/ absent	Present/ absent
Health claim	Low sugar/ absent	Low sodium/ absent	Low sugar/ absent	Good source of calcium/ absent	Excellent source of calcium/ absent
10¢ EP	Present/ absent	Present/ absent	Present/ absent	Present/ absent	Present/ absent

[a] The same company owns all the A brands, and the different brands from the company's house of brands were unique across all five categories Brand $A_1 \neq$ Brand $A_2 \neq$ Brand $A_3 \neq$ Brand $A_4 \neq$ Brand A_5

[b] We established price levels in each category through an investigation of shelf prices at local supermarkets as well as on national grocer Web sites (e g , Albertson's, Safeway) using various zip code location origins

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[3] We used simulations with varying degrees of missingness to test the model and estimation algorithm For a variety of data conditions, the results demonstrated the ability to recover the true simulated data parameters

TABLE 4
Study 2 Attribute Sensitivity, Brand Screening, and Choice Probability Results

	Category 1	Category 2	Category 3	Category 4	Category 5
Attribute Sensitivity					
Price	**–.109**	**–.077**	**– 106**	**–.111**	**–.121**
	(– 121, – 096)	(– 088, – 061)	(– 118, – 096)	(– 121, – 099)	(– 131, – 112)
Brand A	**2 814**	**1.331**	**564**	**1.403**	**2.407**
	(2 641, 2 973)	(1 197, 1 447)	(439, 725)	(1 292, 1 530)	(2 291, 2 521)
Competitor Brand B	**2 713**	**1 165**	**.161**	043	**.560**
	(2 516, 2 902)	(1 000, 1 314)	(047, 276)	(– 022, 118)	(410, 675)
$\delta_{\text{Brand A}}$					
Incremental effect of 10¢ EP	**1.151**	**1.148**	**1 478**	**1.280**	**1.219**
	(724, 947)	(735, 1 023)	(1 142, 1 424)	(962, 1 174)	(679, 831)
Incremental effect of 55¢ coupon	**2.299**	**2.203**	**2 163**	**2.445**	**2.375**
	(2 186, 2 416)	(2 072, 2 320)	(2 067, 2 263)	(2 345, 2 545)	(2 229, 2 527)
Incremental effect of health claim	**–1.078**	– 138	**–1.562**	**.972**	**.686**
	(–1 279, – 899)	(– 290, 018)	(–1 779,–1 376)	(886, 1 040)	(619, 781)
Brand Consideration					
Competitor Brand C	**445**	**277**	**081**	**176**	**344**
	(414, 476)	(253, 304)	(065, 100)	(153, 198)	(313, 373)
Competitor Brand B	**.047**	**.151**	**064**	**.166**	**.256**
	(036, 061)	(128, 175)	(049, 080)	(142, 189)	(230, 281)
Brand A without EP	**033**	**.063**	**.065**	**033**	**.019**
	(022, 046)	(047, 082)	(050, 081)	(021, 046)	(011, 029)
Brand A without coupon	**028**	**077**	**.034**	**016**	**.014**
	(017, 038)	(056, 098)	(022, 048)	(009, 026)	(007, 023)
Brand A without health claim	**.051**	**.182**	**.072**	**.038**	**.041**
	(039, 062)	(159, 205)	(058, 089)	(042, 069)	(029, 053)
$\gamma_{\text{Brand A}}$					
Incremental effect of 10¢ EP	**–.023**	**– 025**	**–.047**	**–.018**	**–.011**
	(– 036, – 011)	(– 046, – 004)	(– 064, – 030)	(– 033, – 003)	(– 022, – 002)
Incremental effect of 55¢ coupon	– 002	– 020	005	011	003
	(– 015, 011)	(– 045, 004)	(– 012, 022)	(– 002, 026)	(– 006, 015)
Incremental effect of health claim	013	000	**.050**	– 017	– 008
	(– 005, 032)	(– 031, 031)	(024, 076)	(– 036, 002)	(– 023, 008)
Choice Probability					
Brand A	**.477**	**.423**	**.408**	**.575**	**664**
	(463, 490)	(408, 437)	(394, 421)	(563, 590)	(652, 678)
$Pr_{\text{Brand A}}$					
Incremental effect of 10¢ EP	**.154**	**144**	**.206**	**126**	**.084**
	(138, 171)	(132, 156)	(192, 219)	(115, 135)	(072, 096)
Incremental effect of 55¢ coupon	**.234**	**219**	**.247**	**.215**	**135**
	(224, 246)	(202, 233)	(234, 260)	(205, 226)	(126, 147)
Incremental effect of health claim	**–.077**	**–.013**	**–.072**	**103**	**054**
	(– 094, – 065)	(– 024, – 001)	(– 084, – 057)	(091, 114)	(046, 064)

Notes Table presents posterior means (95% highest posterior density) Bold entries indicate that 95% highest posterior density does not include zero Brand names are different across categories Brand $A_1 \neq$ Brand $A_2 \neq$ Brand $A_3 \neq$ Brand $A_4 \neq$ Brand A_5

tively, exemplify three classes of competition competitive parity, commoditized, and brand dominant

Figure 1 visualizes the claim that the potential impact of an EP attribute in a category is idiosyncratic to the structure of that category Across the brand portfolio, disparities in relative brand strength—conceptualized as the brand attractiveness differential between Brands A_1–A_5 and the nearest in-category competitor—calibrate an EP program's effectiveness across categories Figure 1 shows that relative strength for the company brands in competitive (A_1 and A_2) and commoditized (A_3) categories is significantly lower than in categories in which the company's brands (A_4 and A_5) dominate (prob > 95) Overall, the rank order of probability gains from EP is inversely related to the relative strength of Brands A_1–A_5 (Kendall's $\tau = -679$, prob > 95), in support of H_3 The implication is that when brand preferences are similar, as in the competitive and commoditized categories, the incremental utility from EP pushes many people who are "on the fence" into the zone of acceptance for the promoted brand, resulting in brand switching If a large proportion of such people exist, the impact of a promotion can be substantial (Grover and Srinivasan 1992, Neslin 2002)

Comparative Efficiency of Self- Versus Other Promotions

Differential brand strength across the house-of-brands portfolio is a determinant of cross-category variation in all types of promotion response, not just EP Table 4 shows a similar pattern of results for the incremental effect of a 55¢ coupon, choice probability gains are strongest in Category 3 (247, prob > 95) and weakest in Category 5 (135, prob > 95)

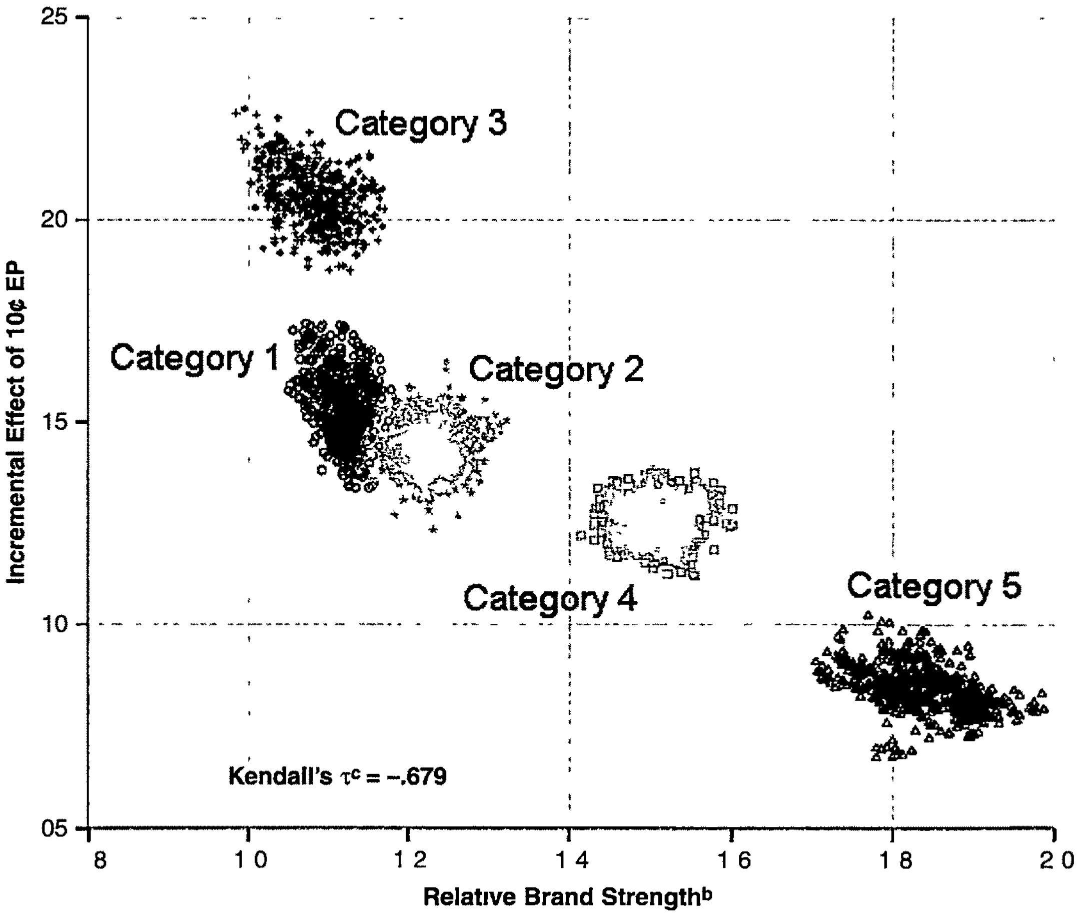
Despite the common factor (i.e., brand strength) that affects both EP and coupon outcomes, EP and coupon effectiveness are only weakly correlated across categories (.120). Thus, there may be important differences between the drivers of self-oriented price promotions and other-focused EP promotions, including the potential for distinct response segments. In assessing the comparative efficiency of EP promotions in relation to price-based promotions, we first examine decision process and social influence factors that may distinguish the self and other value functions.

EP promotions induce brand consideration, and coupons do not. Across categories, the results in Table 4 suggest that some people regard EP promotions as the only reason to consider the company brands, A_1–A_5 (all prob > .95). In contrast, coupon promotions have no effect on brand consideration (all prob < .95) in any of the five categories in Table 4. Although the gains in brand consideration from the EP association are modest, they are noteworthy when we compare them with the null effects of a price promotion on brand consideration both in this study and in Study 1. Thus, unlike price promotions, EP promotions also have a noncompensatory lever for action, bringing an otherwise not considered brand into a person's consideration set and expanding the potential market for an EP-linked brand across product categories. Curiously, when we consider the health claim attributes in Table 4, it appears that certain health claims are "turnoffs" to people in some product categories, indicating, for example, that some people find a low-sugar snack cookie to be unappealing and a reason to not consider the brand.

EP promotions have a bandwagon effect, and coupons do not. A unique aspect of an EP promotion is the explicit linking of individual behavior to collective benefit, but we know little about the relationship between collective behavior and individual behavior in this context (Sobel 2005). Because Study 2 used a real-world EP program, respon-

FIGURE 1

Study 2 Cross-Category Relative Brand Strength and Incremental Effect of 10¢ EP[a]



[a]Each scatterplot point represents one draw from the posterior distributions of both the relative brand strength and the incremental effect of a 10¢ EP measures.

[b]Relative brand strength measures the difference in attractiveness between the focal brand (Brand A) and the nearest within-category competitor. We average category-specific relative brand strength over individuals and compute it at each draw of the posterior distribution using the following formula, where H^c denotes the number of respondents in that particular category. Relative Brand $\text{Strength}_c = [\Sigma_{h=1}^{H^c}\min(|\beta_{hBrand\ A_c} - \beta_{hBrand\ B_c}|, |\beta_{hBrand\ A_c} - \beta_{hBrand\ C_c}|)]/H^c$. The posterior mean (95% highest posterior density) in Category 1 is 1.118 (1.065, 1.160), in Category 2 is 1.228 (1.167, 1.299), in Category 3 is 1.081 (1.011, 1.154), in Category 4 is 1.511 (1.443, 1.578), and in Category 5 is 1.837 (1.729, 1.949).

[c]We compute the Kendall's τ nonparametric rank-order correlation of categories ordered by relative brand strength and incremental effect of 10¢ EP at each draw of the posterior distribution. The posterior mean of this value is –.679 (prob > .95).

dents reported their own EP program participation and provided an estimate of the extent of collective EP program participation within their community As would be expected, individual EP program participation is related to higher EP effectiveness Overall, three quarters of the respondents self-identified as EP program participants Across categories, the impact of an EP on Brands A_1–A_5 choice probability among EP program participants is higher (053, prob > 95) than for nonparticipants

Consistent with the bandwagon (Leibenstein 1950) or conditional cooperation (Frey and Meier 2003) theory of social good participation, there is a significant relationship between social participation perceptions and EP outcomes Among people (34% of sample) who perceive that the majority of their community participates in the EP program, 93% participate themselves This self-participation rate drops to only 65% for people who perceive that EP program participation is less socially pervasive ($\chi^2 = 273\ 973$, $p <$ 05) Average individual pairwise gain in choice probability from EP across Brands A_1–A_5 is higher (020, prob > 95) for people who perceive that more than half their community is also participating in the EP program These results, though not causally conclusive, show a relationship between social participation perceptions and increased EP promotion effectiveness This collective dimension of EP and its influence on EP outcomes is an important contrast to self-oriented price promotions

ROI for an EP versus a coupon In light of the characteristics that distinguish EP promotions from price promotions, we assess the effectiveness and efficiency dimensions of ROI for EP versus a coupon With the exception of stronger EP promotion consideration effects in relation to coupons, coupons tend to dominate EPs in their ability to affect changes in choice behavior The left-hand panel of Figure 2 shows the average simulated market share gains attributable to either an EP or a coupon promotion for each brand in the company portfolio across the five categories The figure highlights that, on average, coupon promotions are 52% more effective than EP promotions at changing choice profiles and driving market share (prob > 95) Initially, a coupon appears to be more effective, but promotion efficiency is determined not only by market share gains but also by how cost effectively those gains can be obtained

We can assess promotion efficiency by first answering the question, Adjusted for face value, what is the price cut equivalent of a coupon versus an EP? At the individual level, we estimate the price cut equivalent of an EP or coupon promotion by evaluating the empirical distribution of the quantities $\beta_h^{EP}/\beta_h^{price}$ and $\beta_h^{coupon}/\beta_h^{price}$ (Meijer and Rouwendal 2006) Posterior means for the 10¢ price cut equivalence of a coupon and EP by category appear in the right-hand panel of Figure 2, we rescaled the coupon valuation by 5 5 to enable direct comparison with the 10¢ EP

The results in the right-hand panel of Figure 2 show that the price cut equivalence of an EP is higher than a comparable coupon, in support of H_4 For example, in Category 4, the average price cut equivalent of a 10¢ EP is 17¢, while the price cut equivalent of a 10¢ coupon in the same category is only 6¢ Across categories, a coupon is worth less to people than a 10¢ price cut (prob > 95) This suggests that transaction costs and consumer expectations about the likelihood of redemption (Bagozzi, Baumgartner, and Yi 1992) result in discounting of the coupon promotion's value In contrast, people ascribe more value to a 10¢ EP than to a 10¢ price cut (prob > 95) This result is consistent with research on the contingent valuation of public goods (Baron 1997) People who choose products with an EP are getting more than the net gain to the public good, they are also receiving intrinsic value, as reflected by a price premium for the EP promotion The existing literature suggests that this premium could be attributed to reasons such as warm glow (Andreoni 1990) or moral satisfaction (Kahneman and Knetsch 1992)

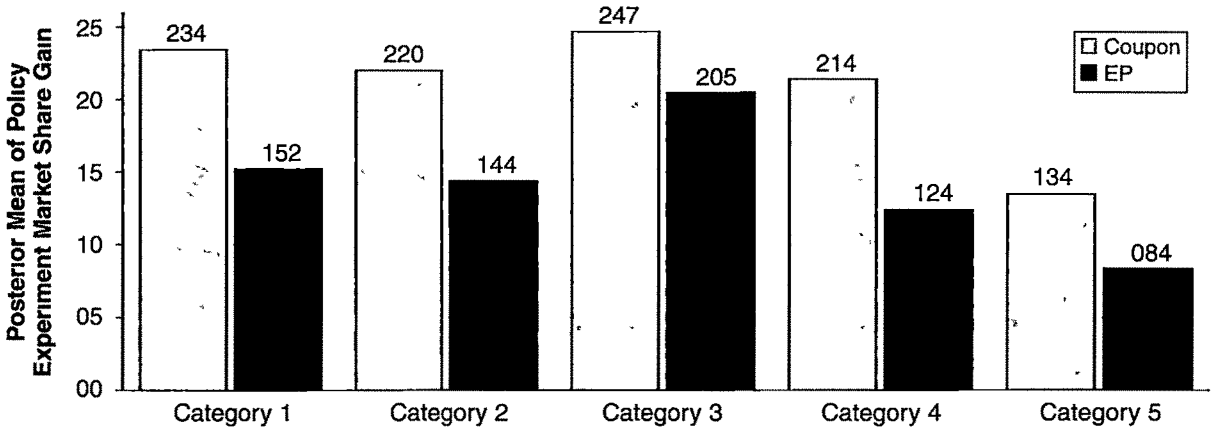
A simple ROI calculation (see Table 5) highlights the implications of these results on promotion budget resource allocation decisions when we assess cost relative to benefits Differences in the face values of a typical coupon and a typical EP promotion give an EP initial cost advantages These cost advantages are calibrated by both the effectiveness of the promotion, measured here by the aggregate simulated market share gain, and the likelihood of redemption Although across the five categories EP promotions are relatively less effective (667, prob > 95) at driving market share for the company brands, A_1–A_5, an EP is cheaper to deploy than a coupon As such, EP promotions are dollar-for-dollar more efficient than coupon promotions Across categories in Study 2, it costs more than twice as much (2 446) to switch a person to Brands A_1–A_5 using a coupon than it does using an EP Because of these cost advantages, an EP, though not as effective in terms of share gain, is a significantly more efficient promotion As a sensitivity check, if we use the same coupon redemption rates and double the EP redemption rates when doing the Table 5 calculations, EP promotions would still be more efficient than coupon promotions (1 223) across categories Similarly, even if we were to cut the relative effectiveness of EP in relation to coupons in half (334), an EP would still be more efficient than the coupon

Discussion

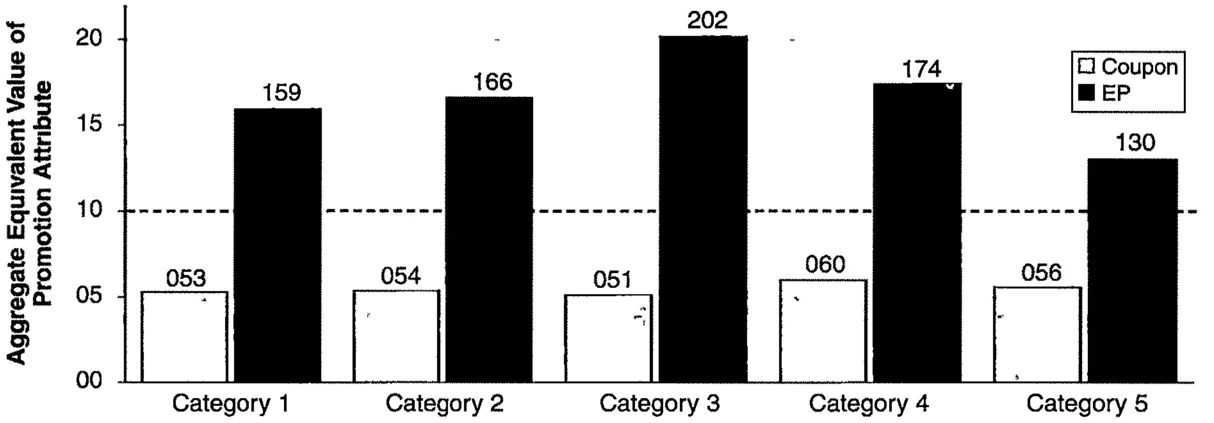
Embedded premium promotions challenge the notion that doing well financially and doing good socially are diametrically opposed business objectives (Friedman 1970) In this article, we investigate EP programs that use the same EP promotion across multiple product categories We identify conceptual and substantive questions germane to multicategory EP programs within both corporate branding and house-of-brands contexts and in juxtaposition with traditional price promotions In the corporate brand EP scenario, we find that EP effects in one category carry over into adjacent categories without an EP association and that increased EP prevalence does little to enhance the residual carryover effect In the house-of-brands EP context, we find an inverse relationship between relative brand strength and incremental gains from EP across categories We find that other-focused EP promotions are different from self-oriented price promotions because they induce brand consideration and are influenced by perceptions of others' behavior Over-

FIGURE 2
Comparing Coupon and EP Promotion Outcomes in Study 2

A Simulated Market Share Gain



B: 10¢ Promotion Price-Cut Equivalence



all, EPs prove to be surprisingly efficient promotions because they generate surplus valuation among people and are relatively cheaper to deploy These findings have significant implications for where and the extent to which an EP program should be deployed in a multicategory context

Managerial Implications

For an EP program implemented for a corporate brand, the carryover effect of enhanced brand attractiveness suggests that a corporate brand can be legitimized by an EP association in one category and then leveraged across other categories If the corporate brand name is associated with an EP in a prominent "flagship" category, other categories may be able to free ride on the goodwill of just one association The lack of additive effects for increased EP promotion prevalence suggests that companies with a corporate branding strategy should think carefully about where and the extent to which they implement an EP program For example, cost-conscious firms might stop short of a full multicategory EP program deployment or selectively scale back an existing program Though not socially optimal, these actions could lead to significant savings for the firm while retaining comparable benefits for the brand These implications are particularly powerful when thinking about selectively deploying an EP program within a single category on some, but not all, stockkeeping units for a brand

Within a house-of-brands context, idiosyncratic brand strength is a driver of differential cross-category promotion outcomes in general and for an EP promotion in particular Despite consistent dispositions toward an EP attribute across categories, when preferences interact with category-specific relative brand strength factors, the EP works better in some categories than in others We find that EP promotions are most effective in influencing the probability of brand choice in highly competitive or commoditized environments In contrast, for categories in which a brand is already strong relative to the competition, a promotion's impact on choice is attenuated because most people already prefer that brand This result advocates a more discriminating application of the EP tool across the brand portfolio, putting it to work helping weak or competitive brands

As with other forms of promotions, EP promotions provide an added incentive to buy Surprisingly, we find significant valuation and efficiency differentials between EP and price promotions Using within-subject conjoint choice

TABLE 5
Study 2 ROI Implications of Coupon and EP Promotions

	Category 1	Category 2	Category 3	Category 4	Category 5
Market share gain coupon[a]	234	220	247	214	135
Market share gain EP[a]	152	144	205	124	084
Relative effectiveness of EP[b]	65	65	83	58	62
Cost/unit coupon[c]	$ 055	$ 055	$ 055	$ 055	$ 055
Cost/unit EP[c]	$ 015	$ 015	$ 015	$ 015	$ 015
Relative efficiency of EP[d]	2 38	2 40	3 04	2 12	2 28

[a] Market share gains for each promotion format represent the posterior mean of the Brand A promotion lift relative to the baseline no-promotion scenario for both an EP promotion scenario and a coupon promotion scenario in an individual-level policy experiment that takes into account both compensatory and noncompensatory effects

[b] Relative effectives of EP = $(\text{MktShare Gain}_{\text{EP}}/\text{MktShare Gain}_{\text{Coupon}})$

[c] The ROI calculations use typical promotion redemption rates of 10% for coupons and 15% for EP (Reibstein and Traver 1982) Multiplying the promotion face value (e g , 10¢ or 55¢) by the expected redemption rate yields the promotion cost per unit

[d] Relative efficiency of EP = Relative effectives of EP × $(\text{Cost per unit}_{\text{Coupon}}/\text{Cost per unit}_{\text{EP}}) = (\text{MktShare Gain}_{\text{EP}}/\text{Cost per unit}_{\text{EP}})/(\text{MktShare Gain}_{\text{Coupon}}/\text{Cost per unit}_{\text{Coupon}})$

experiments and an individual-level model, we derive an inferred price cut equivalence for both coupon and EP promotions Not only do people appear to value an EP promotion more than an equivalent coupon, but they also appear to value an EP promotion more than its stated denomination Theory suggests that people may aquire warm glow or moral satisfaction when evaluating promotions that link choice behavior to the collective good Practically speaking, this surplus value indicates that there are price premium opportunities for products with EP promotions

In general, although a price promotion is a more effective promotion in absolute terms, when we calculate cost relative to benefit, an EP promotion is dollar-for-dollar a more efficient marketing expenditure than a coupon Embedded premium promotions introduce a new set of variables into a person's decision calculus and have an attractive ROI, delivering comparable results at a lower cost threshold than price-based promotions This strong performance should encourage managers to rethink where and the extent to which they are using EP promotions and to subject their own EP programs to ROI scrutiny

Limitations and Research Directions

Most EP programs are implemented over long time horizons amid many other marketing-mix elements and are difficult to assess with behavioral data The survey-based choice experiments we used in this research provide the advantage of experimental control and attribute independence, but they also have shortcomings Companies that want to provide external validity for the findings have the ability to indulge in on/off EP field experiments in controlled market settings, exploring the evolution of EP dynamics and potential multicategory program synergies to make informed ROI performance evaluations In addition, because we use a real-world EP program and respondent screening criteria, the EP efficiency advantage we find in Study 2 may be amplified in part by the characteristics of the sample used To the extent that participants would have disproportionately higher EP redemption rates or would be more sensitive to the EP appeal than is generally expected, the ROI calculation would be affected Although we show that the simple ROI calculation is somewhat robust to changes in assumptions, a more definitive examination of ROI should involve behavioral and marketing-mix data from a real-world EP program

In mixing branding contexts and experimental designs, this research attempts to balance experimental clarity with substantive realism Using only between-subjects designs and the same fictional EP program would help clarify branding strategy and EP program context questions but would preclude relative promotion valuation and reality-based efficiency assessments, which are important contributions of this research Similarly, the model-based approach we use facilitates individual-level assessment and parameter-based inference but leaves process-related questions unanswered Further research might probe the role of category fit and brand atypicality from brand extension research in defining the boundaries of EP carryover and additivity In addition, because we use a real-world EP program and measure rather than manipulate perceived social participation, we observe only an association between increased perceptions of collective participation and larger individual-level promotion effects Further research might examine the causal relationship between group participation perceptions and individual other-regarding behavior, as well as the mechanism through which information about the collective behavior is translated In particular, the link among social interdependence, cause communities, word of mouth, and EP program participation seems particularly relevant

The focus of this article has been on EP programs that span categories In thinking about all possible combinations of branding strategy and EP strategy, a company with a house-of-brands might consider a customized EP strategy that would be unique to each brand in the company's portfolio We did not examine this context, but because both brand and EP are different across categories, a customized EP under a house-of-brands strategy is conceptually analogous to existing research on EP in a single-category context By extension, another scenario of interest might be a corporate brand and a customized EP Although a customized EP strategy might offer differentiation opportunities for a corporate brand across categories, a corporate-branded company's emphasis on economies of marketing scale characterized by the one-size-fits-all approach suggests that a customized EP could be a bad fit for a corporate-branded company

In closing, we note that this research focused on EP implications for the company, but what is the ROI of EP for society? At first glance, it might appear that EP programs have a positive influence on social welfare, but are there negative network externalities? For example, are companies reallocating resources away from traditional philanthropic giving into marketing-focused EP programs? Are the costs of the EP-funded public good passed through to consumers in the form of higher prices? Is EP a zero-sum game for some people who may be substituting out of traditional charitable activities into EP giving? These broader public policy questions remain unanswered and deserve careful attention

Technical Appendix

Estimation Algorithm

This Appendix provides details of the algorithm and Z matrix we used to estimate the cross-category noncompensatory conjunctive model A compensatory model (comparative fit reported for both studies) is a special case of this algorithm Subscript h indexes individuals, m indexes attribute levels, j indexes choice sets, k indexes alternatives inside choice sets, and $c \in c'$ identifies the subset of categories with observed responses for individual h We have complete data for Study 1—all respondents provided data for all three categories In Study 2, each respondent provided data for two of the five categories

The steps we detail next are based on the procedure Gilbride and Allenby (2004, 2006) and Rossi, Allenby, and McCulloch (2005) outline, and they describe a Markov chain Monte Carlo in which the posterior distribution of the parameters is the stationary distribution We run the chain for 20,000 iterations, retaining the final 10,000 draws as the posterior distribution of the model parameters We assessed convergence using time-series plots of the chain

1 Generate $\beta_h | y_h, X_h, Z_h, \tau_h, \delta, V_\beta$, for household h, choice set j, and category c such that $c \in c'$

- Let $\mathbf{I}(x_{hcjk}, \tau_{hc}) = 1$ if $\sum_{m=1}^{M} \left(\tau_{hcm} \times x_{hcjkm}\right) = 0$, and

$$\text{Likelihood } l_{hcj} = \Pr\left(y_{hcjk'} = 1\right) = \frac{\exp\left(x'_{hcjk'}\beta_{hc}\right)}{\sum_{k=1}^{K} \mathbf{I}\left(x_{hcjk}, \tau_{hc}\right)\left[\exp\left(x'_{hcjk}\beta_{hc}\right)\right]},$$

- Evaluate the likelihood at the current draw β_h^n and the new draw β_h^n Accept β_h^n with the following probability

$$\min\left\{\frac{\prod_{c \in c'}\prod_{j=1}^{J} l_{hcj}^{n} \times \exp\left[-\frac{1}{2}\left(\beta_h^n - \bar{\beta}\right)' V_\beta^{-1}\left(\beta_h^n - \bar{\beta}\right)\right]}{\prod_{c \in c'}\prod_{j=1}^{J} l_{hcj}^{d} \times \exp\left[-\frac{1}{2}\left(\beta_h^d - \bar{\beta}\right)' V_\beta^{-1}\left(\beta_h^d - \bar{\beta}\right)\right]}, 1\right\},$$

where $\bar{\beta} = Z\delta$

2 Generate $\tau_h | y_h, X_h, Z_h, \beta_h, \gamma$, for household h, choice set j, and category c, such that $c \in c'$

- For each m, let $\mathbf{I}\left(x_{hcjk}, \tau_{hc}\right) = 1$, if $\sum_{m=1}^{M}\left(\tau_{hcm} \times x_{hcjkm}\right) = 0$,

if $\mathbf{I}\left(x_{hcjk}, \tau_{hc}\right) = 0$ and $y_{hcjk} = 1$, reject $\tau_{hcm} = 1$, or calculate

$$\text{Likelihood } l_{hcj} = \Pr\left(y_{hcjk'} = 1\right) = \frac{\exp\left(x'_{hcjk'}\beta_{hc}\right)}{\sum_{k=1}^{K} \mathbf{I}\left(x_{hcjk}, \tau_{hc}\right)\left[\exp\left(x'_{hcjk}\beta_{hc}\right)\right]}$$

and accept $\tau_{hcm} = 1$ with probability

$$\frac{\prod_{j=1}^{J} l_{hcj}^{\tau=1} \times \theta_{cm}}{\prod_{j=1}^{J} l_{hcj}^{\tau=1} \times \theta_{cm} + \prod_{j=1}^{J} l_{hcj}^{\tau=0} \times \left(1 - \theta_{cm}\right)},$$

where $\theta_{cm} = \frac{\exp Z'_h \gamma_{cm}}{1 + \exp Z'_h \gamma_{cm}}$

3 Generate $\delta | V_\beta, \{\beta_h\}, Z \sim N[\tilde{\delta}, (\tilde{Z}'\tilde{Z} + A)^{-1}]$, where

$$\begin{aligned} \delta &= (\tilde{Z}'\tilde{Z} + A)^{-1}(\tilde{Z}'\tilde{B} + A\Delta), \\ \tilde{Z} &= [(U^{-1})' \otimes I_H]Z, \\ \tilde{B} &= [(U^{-1})' \otimes I_H]\{\beta_h\}, \\ \{\beta_h\} &= Z_\delta + \varepsilon,\ \varepsilon \sim N(0, V_\beta \otimes I_H) \end{aligned}$$

(see Rossi, Allenby, and McCulloch 2005, p 65)

4 Generate $V_\beta | \delta, \{\beta_h\}, Z$ $V_\beta \sim IW[\nu + H, V_o + \Sigma_{h=1}^{H}(\beta_h - Z_h\delta)(\beta_h - Z_h\delta)']$

5 Generate $\gamma | \tau, Z$ For each m, evaluate the following function at the current draw γ^d and the new draw γ^n

$$L_m = \prod_{h=1}^{H}\left[\frac{\exp\left(Z'_h\gamma\right)}{1 + \exp\left(Z'_h\gamma\right)}\right]\tau_{hm} + \left\{1 - \left[\frac{\exp\left(Z'_h\gamma\right)}{1 + \exp\left(Z'_h\gamma\right)}\right]\right\}\left(1 - \tau_{hm}\right)$$

Accept γ^n with the following probability

$$\min\left\{\frac{L_m^n \times \exp\left[-\frac{1}{2}\left(\gamma^n - \bar{\gamma}\right)' V_\gamma^{-1}\left(\gamma^n - \bar{\gamma}\right)\right]}{L_m^d \times \exp\left[-\frac{1}{2}\left(\gamma^d - \bar{\gamma}\right)' V_\gamma^{-1}\left(\gamma^d - \bar{\gamma}\right)\right]}, 1\right\}$$

Prior distributions for the hyperparameters are $\delta \sim N(\Delta, A^{-1})$, $V_\beta \sim IW(\nu, V_0)$, and $\gamma \sim N(\bar{\gamma}, V_\gamma)$ Here, Δ is a d vector of zeros, $\bar{\gamma}$ is a m vector of zeros, $A^{-1} = 100I_d$, $\nu = n + 1$, V_0 is a $n \times n$ matrix with ν on the diagonal, and $V_\gamma = I_m$

Z Matrix: Operational Details

We made all comparisons in Study 1 between subjects across the five experimental conditions There are de~luxe brand covariate indicators by condition for both coupon and EP promotion effects as well as carryover and prevalence effects, as we detail in Table A1 When operationalizing the Z matrix for the three de~luxe brand coefficients, in addition to the common baseline intercept, we use an indicator linked to the specific EP or coupon treatment to capture any systematic differences in the de~luxe brand sensitivity and screening parameters across the experimental conditions

TABLE A1
Study 1 Treatment Condition Covariates for the de~luxe Brand

Treatment Condition Covariates for de~luxe	z_0 Intercept	z EP	z EP Carryover	z EP Prevalence	z Coupon	z Coupon Carryover	z Coupon Prevalence
Control							
Shampoo	1	0	0	0	0	0	0
Body wash	1	0	0	0	0	0	0
Lotion	1	0	0	0	0	0	0
EP first category							
Shampoo	1	1	0	0	0	0	0
Body wash	1	0	1	0	0	0	0
Lotion	1	0	1	0	0	0	0
EP first and second category							
Shampoo	1	1	0	0	0	0	0
Body wash	1	1	0	0	0	0	0
Lotion	1	0	1	1	0	0	0
Coupon first category							
Shampoo	1	0	0	0	1	0	0
Body wash	1	0	0	0	0	1	0
Lotion	1	0	0	0	0	1	0
Coupon first and second category							
Shampoo	1	0	0	0	1	0	0
Body wash	1	0	0	0	1	0	0
Lotion	1	0	0	0	0	1	1

For example, we use an indicator to capture the effect of the EP treatment on the de~luxe brand shampoo parameter ($Z_0 = 1, Z_{EP} = 1, Z_{coupon} = 0$), which is absent for people in the control ($Z_0 = 1, Z_{EP} = 0, Z_{coupon} = 0$) and coupon ($Z_0 = 1, Z_{EP} = 0, Z_{coupon} = 1$) conditions We apply the covariate parameter shift only to the three de~luxe brand parameters for each category We illustrate this subsequently for the first five model parameters in which the de~luxe brand shampoo parameter is number five in the list

$$\{\beta_h\}' = \left(\{\beta_h\}'_1, \quad ,\{\beta_h\}'_5, \quad \right)$$

$$Z = \begin{bmatrix} Z_1 & 0 & 0 & 0 & 0 & \\ 0 & Z_1 & 0 & 0 & 0 & \\ 0 & 0 & Z_1 & 0 & 0 & \\ 0 & 0 & 0 & Z_4 & 0 & \\ 0 & 0 & 0 & 0 & Z_5 & \\ & & & & & \end{bmatrix}$$

$$\delta' = \left(\delta'_1, \quad ,\delta'_5, \quad \right)$$

$$\varepsilon' = \left(\varepsilon'_1, \quad ,\varepsilon'_5, \quad \right)$$

$$\{\beta_h\}_5 \;\; H\times 1 \;\; Z_5 \;\; H\times 3 \;\; \delta_5 \;\; 3\times 1 \;\; \varepsilon_5 \;\; H\times 1$$

$$z_{h5} = [1, 0, 0] \text{ if } h \in \text{condition}_{\text{control}},$$
$$z_{h5} = [1, 1, 0] \text{ if } h \in \text{condition}_{\text{EP}},$$
$$z_{h5} = [1, 0, 1] \text{ if } h \in \text{condition}_{\text{coupon}}$$

$$\{\beta_h\}_{1\;\;4} \;\; H\times 1 \;\; Z_{1\;\;4} \;\; H\times 1 \;\; \delta_{1\;\;4} \;\; 1\times 1 \;\; \varepsilon_{1\;\;4} \;\; H\times 1$$
$$z_{h1}, z_{h2}, z_{h3}, z_{h4} = 1 \forall h$$

Because Study 2 is a within-subject design and has no between-subjects factors, EP and coupon promotion effects are individual-level parameters, and the hyperparameter covariate is simply a vector of ones for all coefficients

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Frank Q. Fu, Keith A. Richards, Douglas E. Hughes, & Eli Jones

Motivating Salespeople to Sell New Products: The Relative Influence of Attitudes, Subjective Norms, and Self-Efficacy

This research explores the relative influence of salespeople's attitudes toward selling a new product, perceptions of subjective norms, and self-efficacy on the development of selling intentions and, ultimately, the success of a new product launch The longitudinal study employs a nonlinear growth curve model that leverages survey data from industrial salespeople and objective performance records of their daily sales during the first several months in the market of two new products a new-to-market product and a line extension By examining salesperson-level variance on new product performance, the authors suggest that managers should focus on increasing salesperson self-efficacy and positive attitudes toward selling the product to build selling intentions and quickly grow new product performance They also suggest that sales managers should resist the temptation to rely on normative pressure during a new product introduction Not only are subjective norms less effective in building selling intentions, but they also diminish the positive impact of attitudes and self-efficacy on salesperson intentions and constrain the positive relationships between intentions and performance and self-efficacy and performance

Keywords new product sales, theory of planned behavior, managerial influence, multilevel growth curve modeling

New products are critical to a firm's ongoing sustainability, though they are often costly and fraught with risk Indeed, new product development has been identified as one of three core business processes and an important driver of shareholder value (Srivastava, Shervani, and Fahey 1999) In addition, product innovation has become increasingly important as a means for competitive advantage, sustainable growth, and financial success in today's ultracompetitive business environment (Pauwels et al 2004, Sorescu and Spanjol 2008) However, only a small percentage of new product initiatives succeed in the marketplace (Delre et al 2007), reinforcing the need for additional research into factors that lead to successful commercialization

In particular, little research has focused on the sales force, one of the most pivotal contributors to the success of a new business-to-business product Customer-contact employees (1) serve as important intermediaries between new product innovation and customers (Abramovici and Bancel-Charensol 2004), (2) directly affect customers' product perceptions, and (3) facilitate customer adoption of innovations (Ahearne et al 2010) To advance the literature on new product development, it is important to further study the critical role of salespeople in a new product launch and to better understand salespeople's intentions and behaviors with respect to selling new products

Because field salespeople often operate in a relatively autonomous environment without close monitoring of their day-to-day activities, they enjoy a considerable degree of discretion in terms of what they focus on and how they expend energy (Spiro, Rich, and Stanton 2007) This creates obvious challenges for management during a tactical initiative such as a new product introduction Ultimately, the impact of a salesperson on the performance of a new product rests on his or her decision to put forth the effort necessary to sell the new product

Thus, managers are faced with the dilemma of where to allocate resources to motivate salespeople to sell the new product Should they focus on developing and communicating norms and expectations related to the new product launch (perhaps the simplest and most often used solution for managers), on increasing the inherent attractiveness of selling the new product, or on increasing the salesperson's belief in his or her ability to sell the new product? Given these questions, it is critical to understand the perceptions of salespeople regarding a new product launch and how these perceptions affect their behavioral intentions In doing

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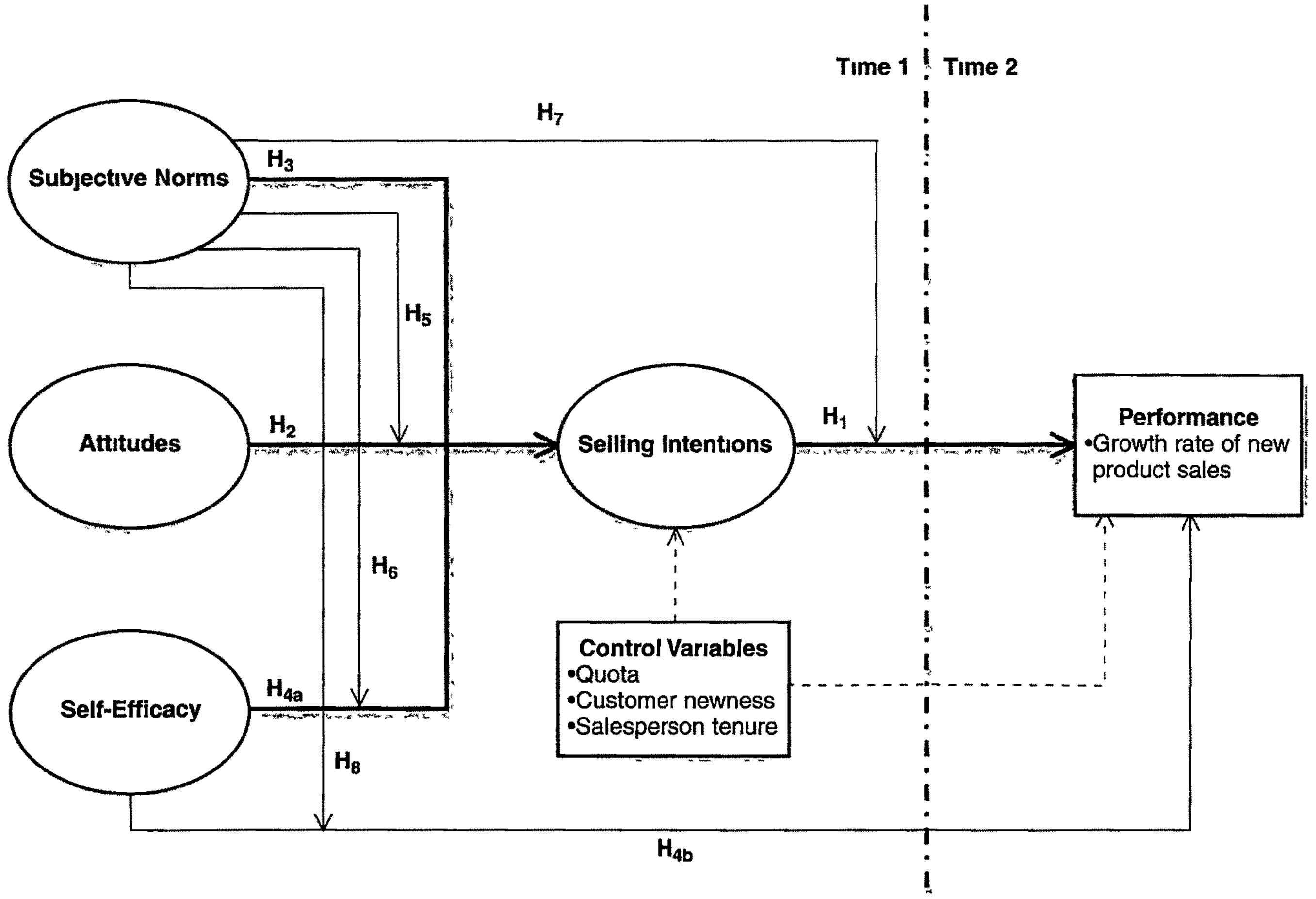
so, we reveal prescriptive insights for managers to maximize salesperson responsiveness and performance on new product initiatives.

The product life cycle indicates that a new product launch is not a static event but rather a dynamic process that unfolds over time. In a successful new product launch, an introductory period of slow expansion typically precedes a "tipping point" that leads to a sustained, rapid-growth phase and builds toward widespread adoption (Agarwal and Bayus 2002). Therefore, it is desirable for sales to grow quickly so the firm can build a competitive advantage, pay off its development and start-up costs, avoid internal pressures to discontinue the new product launch prematurely, and generate cash to fuel further growth (Golder and Tellis 2004; Tellis, Stremersh, and Yin 2003). However, this introductory phase may last a long time and varies across products and markets. We assert that this introductory phase also varies across salespeople and suggest the importance of investigating two elements of the new product life cycle: (1) the slope of each salesperson's sales growth curve (growth rate of sales) and (2) how each salesperson's perceptions and intentions affect new product success.

We anchor our study in the theory of planned behavior (TPB), an effective predictor of both intentions and behaviors (Armitage and Conner 2001), to examine the formation of salespeople's intentions to act—in this case, to sell new products (Ajzen 1991). Consistent with the TPB, we suggest that a salesperson's intentions to put forth effort to sell a new product (and, thus, the ultimate performance of the new product in each salesperson's territory) are affected by his or her (1) attitudes toward selling the product, (2) perceptions of subjective norms surrounding the sale of that product (e.g., management expectations), and (3) beliefs in his or her own ability to sell the product (for a model overview, see Figure 1). Our research goal is to inform managers and scholars about the relative influence of each antecedent on performance and to explore the moderating effects of subjective norms, which have produced confounding effects in previous tests of the theory (Armitage and Connor 2001).

FIGURE 1

The Relative Influence of Attitudes, Subjective Norms, and Self-Efficacy on Selling Intentions and New Product Performance



Notes: The vertical dashed line indicates separation of data collection efforts. Time 1 is survey data collected before product launch (indicated by ovals), and Time 2 is objective performance data collected across the first 12–15 months of sales (indicated by rectangles). "Control Variables" comprise both survey data and company records.

This study makes several contributions to the body of research on new product sales First, by considering multiple levels of influence on new product selling performance, to our knowledge, we are the first to investigate variance in new product performance based on salesperson-level, psychological factors related to selling a new product We model a nonlinear growth curve for each salesperson in Level 1 and examine individual, salesperson-level influences in Level 2 of the hierarchical analysis This accounts for the impact of time on sales growth in Level 1 and explains the impact of psychological factors on salesperson performance in Level 2

Second, we investigate the appropriateness of the various strategies managers may employ to improve the growth rate of a new product's sales Our model examines the relative merits of building positive attitudes toward selling the new product, establishing behavioral norms for selling the new product, and building salesperson self-efficacy toward selling the new product Furthermore, because previous studies have found contradictory results regarding the role of subjective norms in developing intentions (e g , Hubner and Kaiser 2006, Legris, Ingham, and Collerette 2003), we pay particular attention to the role of subjective norms in establishing salesperson selling intentions and performance We find evidence of moderating effects that suggest that building high expectations among salespeople to sell a new product can have deleterious effects on both intentions and performance

Third, we examine the growth rate of new product sales, a critical early signal of new product success Given firms' need to establish the sales of a new product quickly (Golder and Tellis 2004), the growth rate of a new product's sales provides insight into new product success

Fourth, we treat the new product launch more realistically and more fully as an unfolding process (rather than a discrete event) and examine the rate at which sales grow over time for each salesperson Our longitudinal study design enables us to provide further insights into the dynamic nature of the sales force's role in new product launches, including the nonlinear evolution of sales performance, which reflects the increasing interest in nonmonotonic relationships in innovation research (e g , Voss, Montoya-Weiss, and Voss 2006) Examination of the first several months of each salesperson's daily sales offers a better understanding of how salesperson-level variance affects new product sales over time in this critical early launch phase

Fifth, we examine data from two types of new products a new-to-market product and a line extension By examining the sales force's intentions to sell both products, we add to the generalizability of our findings and are better able to validate the stability of the statistical relationships in our model In other words, our goal is to explore the psychological constructs at the salesperson level that influence product performance outcomes, not to investigate how salespeople perform differently across different products Last, the study's unique data sets contain both survey data and objective performance data, which help ensure that the study's results are not capitalizing on common source biases (Podsakoff et al 2003) Taken together, these contributions will help managers understand how to grow new product sales quickly

Literature Review: New Product Performance, TPB, and the Sales Force

A large body of research on new product initiatives identifies and explores a wide array of antecedents to new product performance, including product characteristics, marketplace characteristics, firm strategies, internal processes, and commercialization practices (Henard and Szymanski 2001, Montoya-Weiss and Calantone 1994) Among these antecedents, new product commercialization represents the largest investment of time, money, and management resources in the new product development process, however, it is also among the least researched (see Di Benedetto 1999)

Given the information asymmetry between buyers and sellers during a new product launch and the uncertainty of new product success, when salespeople communicate product-related information to customers, it is reasonable that they may significantly influence customer perceptions of a firm's products and, ultimately, their buying behavior Prior studies have alluded to salespeople's commitment and execution as contributing factors in the success of the products they sell (Anderson and Robertson 1995) Studies on the effects of supervisee trust and managerial control systems on sales effort (Atuahene-Gima and Li 2002), the influence of expected customer demand on salespeople's new brand adoption (Wieseke, Homburg, and Lee 2008), and the contingent impact of sales effort on new product performance (Atuahene-Gima and Micheal 1998, Hultink and Atuahene-Gima 2000) all provide further insights into the connection between the sales force and new product success However, previous studies have fallen short of connecting salesperson-level, psychological variables with a salesperson's intention to sell a new product

Sales scholars have long tried to understand salesperson behavior and the factors that lead to more successful sales outcomes In this study, we employ the TPB (Ajzen 1991) to explain the formation of a salesperson's intention to act and the link between those intentions and the resultant behavior Armitage and Conner's (2001, p 489) meta-analysis finds "support for the efficacy of the [TPB] as a predictor of intentions and behaviour" The use of the TPB and its predecessor, the theory of reasoned action (Fishbein and Ajzen 1975), in sales research has helped scholars explain ethical decision making in sales (Kurland 1996), salesperson use of technology (Jones, Sundaram, and Chin 2002), and salesperson customer orientation (Stock and Hoyer 2005) We conceptualize this study in a manner consistent with previous studies (Ajzen 1991, Fishbein and Ajzen 1975), but we adapt the constructs and their measures to the new product sales context In the following section, we define each construct in the model and build each hypothesis necessary to test the theory

Hypotheses Development

Intentions and Sales Performance

A central tenet of the TPB is the link between a person's intention to behave in a certain way and his or her actual behavior According to the theory, the intention to perform a behavior serves as the most immediate predictor of any behavior in question (Ajzen 1991) By capturing the motivational factors that influence behavior, intentions serve as an indicator of how hard people are willing to try and how much effort they are willing to exert over time to perform a specific behavior (Ajzen 1991) To better understand the outcomes of these behaviors in the dynamic environment of new product sales, we measure the slope of each salesperson's sales curve (or sales growth rate) As we stated previously, the early growth of a new product is essential to the success of the product

Given the scholarly support for the link between effort and performance in sales of both existing products (Brown and Leigh 1996, Zoltners, Sinha, and Zoltners 2001) and new products (Fu, Jones, and Bolander 2008, Hultink and Atuahene-Gima 2000), we attempt to establish the relationship between intentions (the antecedent to effort in the TPB) and the growth rate of new product sales (the consequents of salesperson effort) Scholars and managers have explored this effort–performance link in sales through an input–output framework (Jaramillo and Mulki 2008) and found that higher levels of effort lead to higher performance levels (Brown and Peterson 1994)

In the business-to-business context of this study, in which customers learn about new products primarily from company sales representatives, (i e , a "push" versus "pull" marketing strategy), we expect the effort–performance relationship to be particularly strong Facing unfamiliar new products, customers are usually suspicious of claimed benefits, reluctant to change their buying behavior, and dependent on salespeople for product information (Atuahene-Gima 1997) Qualified and committed salespeople provide the information needed to reduce customers' confusion and employ the most appropriate selling tactics to persuade their customers (Elliott and Fu 2008) Thus, a salesperson's greater selling intention is likely to result in both earlier and more effective sales calls, which in turn fosters early adoption (Hultink and Atuahene-Gima 2000) By using objective measures obtained from company records as a surrogate for behavior in our TPB model, we avoid biases common in self-report measures of effort Therefore, we expect the following

H_1 A salesperson's selling intention positively influences the growth rate of new product sales

The Relative Influence of Attitudes, Subjective Norms, and Self-Efficacy

The TPB proposes that there are three conceptually distinct and independent antecedents to the formation of intentions attitudes, subjective norms, and perceived behavioral control First, consistent with research on attitudes, we define a salesperson's attitude toward selling a new product as the degree to which he or she has a favorable or unfavorable predisposition toward selling the focal new product (Ajzen 1991) Here, we are not measuring the salesperson's attitude toward the new product but rather the salesperson's attitude toward *selling* the new product A person develops positive attitudes when he or she positively evaluates salient attributes related to the subject in question (Ajzen 1991) More specifically, in assessing the salesperson's attitude toward selling the new product, we tap into his or her personal evaluation of the expected enjoyment of the related selling task Following previous TPB research, we suggest the following

H_2 A salesperson's attitude toward selling the new product is positively associated with selling intentions

Second, we examine subjective norms, a social factor that leads to the formation of intentions Consistent with Ajzen (1991), subjective norms are perceived organizational, managerial, and social pressures to sell the new product For salespeople, normative pressure can come from marketing management, product management, sales management, top management, or fellow salespeople Because of their high visibility, new product initiatives can produce considerable managerial attention during in-market execution, leading to salesperson perceptions of strong managerial expectations (i e , norms) pertaining to the new product launch The pressure to comply with these norms comes in the form of salespeople knowing that their opportunities for promotion and career advancement with their current employer are typically contingent on management evaluations, which are shaped by salespeople meeting or exceeding established expectations Therefore, the more salespeople believe that there will be serious consequences for not selling a new product or salient rewards for doing so, the greater will be their intention to sell the new product In addition to managerial expectations, the expectations of other salespeople are becoming increasingly relevant, and salespeople may be highly motivated to comply with pressure from peers as well as management Thus, consistent with the TPB, we suggest the following

H_3 A salesperson's perceptions of subjective norms related to selling the new product are positively associated with selling intentions

Third, we examine the link between perceived behavioral control and performance Ajzen (1991, p 188) defines perceived behavioral control as "the perceived ease or difficulty of performing the behavior" Perceived behavioral control is akin to the concept of self-efficacy (Ajzen 1991), a construct commonly used in sales research Similar to previous examinations of the TPB (e g , Armitage and Conner 2001) and studies in sales literature (e g , Brown, Jones, and Leigh 2005), we use self-efficacy as a measure of perceived behavioral control Recently, scholars have examined the use of self-efficacy as a replacement for perceived behavioral control in the TPB, and their findings indicate that self-efficacy is "consistently the strongest predictor" of intentions when compared with other measures of perceived behavioral control (Celuch, Goodwin, and Taylor 2007, p 116), a conclusion supported by Armitage and Conner's (2001, p 487) meta-analysis "The implication is that self-efficacy should be the preferred measure of 'perceived control' within the TPB "

We define self-efficacy as salespeople's perceptions of their own ability to sell the new product or their beliefs that they possess the skills and resources necessary to succeed during the new product launch (Brown, Jones, and Leigh 2005) "Individuals who have positive self-efficacy beliefs focus their attention and motivation on the tasks necessary for achieving targeted performance levels and persevere in the face of difficulties" (Brown, Jones, and Leigh 2005, p 974) Empirical studies have found that people who have greater self-efficacy tend to achieve better performance (see Gist and Mitchell 1992) In addition, researchers have found that self-efficacy affects sales performance both directly and indirectly (Brown, Jones, and Leigh 2005, Jaramillo and Mulki 2008) Therefore, consistent with the TPB and our previous arguments, we posit a positive relationship between self-efficacy and selling intention and between self-efficacy and the growth rate of new product sales

> H_4 A salesperson's self-efficacy is positively associated with (a) selling intentions and (b) the growth rate of the new product sales

The Moderating Role of Subjective Norms

The previous discussion seems to imply that fostering more positive attitudes, establishing normative pressure, and increasing self-efficacy across the sales force are all effective ways to build salesperson selling intentions during a new product launch However, we suggest that the story is more complex Subjective norms may instead act as a wolf in sheep's clothing Of the three antecedents to intentions, subjective norms have historically been the most problematic to replicate empirically, leading researchers to conclude that its role in influencing intentions may be context dependent (Hubner and Kaiser 2006, Legris, Ingham, and Collerette 2003) Although we expect that subjective norms surrounding a new product launch will lead to heightened new product selling intentions, we also believe that such normative pressure may result in a few unintended negative consequences

Attitudes and subjective norms in our context are different in their origin and orientation Because subjective norms reflect the salesperson's perceived expectations of salient others, in this case management and peers, the accompanying pressure to comply is more extrinsic in nature Extrinsic motivation is the "motivation to work primarily in response to something apart from the work itself, such as reward or recognition or the dictates of other people" (Amabile et al 1994, p 950) In contrast, attitudes, or the expected enjoyment of selling the new product, are more intrinsic in nature, involving "motivation to engage in work primarily for its own sake, because the work itself is interesting, engaging, or in some way satisfying" (Amabile et al 1994, p 950) Previous studies have shown that though both types of motivation prompt behavior in isolation, intrinsic motivation can be undermined by extrinsic motivation mechanisms (Deci, Koestner, and Ryan 1999) Essentially, the controlling nature of the external influence thwarts the intrinsic satisfaction associated with the behavior, leading to a diminished effect of intrinsic motivation Because of this, we expect that managers' externally generated expectations (e g , subjective norms) will negatively moderate the positive influence of the internally generated attitudes on the development of selling intentions In other words, in the presence of strong subjective norms, positive attitudes are less likely to drive selling intentions Thus

> H_5 Subjective norms negatively moderate the positive relationship between attitudes and selling intentions

Furthermore, we assert that as subjective norms increase, they may also weaken the positive impact of self-efficacy on selling intentions Without subjective norms in a moderating role, we hypothesize increased levels of selling intentions as self-efficacy increases However, as subjective norms increase, the pressure to appease and comply with others may attenuate the relationship between a salesperson's belief in his or her ability to sell a product successfully and his or her intentions to sell the new product

Rather than motivating the self-efficacious salesperson, we argue that normative pressure adds counterproductive layers of stress and doubt Stress functions in a way similar to role stress, such that stress stemming from the expectations of role partners (e g , sales managers, fellow salespeople) negatively affects the psychological well-being of boundary spanners (Singh, Verbeke, and Rhoads 1996) Similarly, we expect the stress generated by subjective norms to weaken the link between self-efficacy and the development of selling intentions

Moreover, Benabou and Tirole (2003) suggest that the "looking-glass effect" begins to introduce doubt in an agent's (salesperson's) mind when a principal (manager) builds strong normative pressure related to the completion of a task These heightened normative levels cause salespeople to question whether their assessment of the selling task is based on good information In other words, salespeople may begin to "read into" the manager's actions and question whether their belief in their ability to accomplish a task is based on full, accurate information When salespeople are unsure of the outcomes or are under stress, their belief in their ability to act is less likely to yield selling intentions Therefore, the felt stress associated with subjective norms weakens the otherwise positive relationship between self-efficacy and selling intentions

> H_6 Subjective norms negatively moderate the positive relationship between self-efficacy and selling intentions

In addition to these limiting effects of subjective norms in the creation of selling intentions, we expect other potential downsides from subjective norms We hypothesize that subjective norms give rise to a compliance effect among salespeople that helps form intentions to act in accordance with expectations However, we suggest that when intentions are formed, subjective norms are likely to have a dampening effect on the relationship between selling intentions and performance

The reasons for this are twofold First, the behavior arising from intentions becomes less intrinsically satisfying, inhibiting the transition from intentions to performance

Strong normative pressure is likely to engender a "have-to-do" versus a "want-to-do" mentality, in which the salesperson develops behavioral intentions but then follows through with reduced interest and vigor. In support of this, researchers have established that high managerial expectations can overwhelm the compliance effect it creates among sales personnel (e.g., Chowdhury 1993; Fang, Palmatier, and Evans 2004). Second, high expectations arising from normative pressure during a new product launch can induce role stress that diminishes the effect of intentions on performance. For example, prior research has demonstrated that felt stress can adversely affect a salesperson's ability to influence buyers (MacFarland 2003).

Thus, although subjective norms may have the desired effect of influencing salesperson intentions to sell a new product, those intentions may be less likely to translate into actual performance in the presence of strong norms. Subjective norms will attenuate the effect of intentions on performance. Relatedly, Ahearne and colleagues (2010) show that behavior-based controls have a positive influence on salesperson effort while also having a negative effect on the relationship between salesperson effort and customer product perceptions by promoting a tendency to work hard at the expense of working smart. Thus:

> H_7: Subjective norms negatively moderate the relationship between intentions and the growth rate of new product sales.

The relationship between self-efficacy and the growth rate of new product sales is based on the logic that salespeople with higher levels of beliefs in their ability (e.g., confidence) focus on the right tasks and persevere in difficult situations (Brown, Jones, and Leigh 2005). However, we argue that as managers increase normative pressures, the positive relationship between self-efficacy and growth rates diminishes because of the negative effects of misplaced focus and role stress created by higher norms. Again, we suggest that the looking-glass effect decreases the effectiveness of self-efficacy on positive performance outcomes as salespeople begin to read into the manager's actions and get distracted from the task at hand (Benabou and Tirole 2003). Condry and Chambers (1978, p. 66) find that "rewards often distract attention from the process of the task activity to the product of getting a reward." Subjective norms may be viewed as a negative reward in this context, and as more attention is placed on the development of normative expectations, salespeople may focus less on selling the new product and more on the manager's performance expectations. This shift in focus leads to attenuation of the self-efficacy–performance relationship. Thus:

> H_8: Subjective norms negatively moderate the relationship between self-efficacy and the growth rate of new product sales.

Methods

Data Collection

Sales performance is a dynamic construct unfolding over time during a new product launch. However, most studies on the effects of individual salespeople on new product success have employed cross-sectional data and one-time performance measures (Atuahene-Gima and Li 2002; Hultink and Atuahene-Gima 2000; Wieseke, Homburg, and Lee 2008). This is problematic because, as Thoresen and colleagues (2004) argue, oversimplified assumptions about the stability of performance can result in erroneous conclusions and interpretations about the relationships between performance and other important employee-level constructs. To avoid these potentially erroneous conclusions, the current study employs a longitudinal growth curve modeling approach. In doing so, we attempt to establish an understanding of the appropriate strategies managers can employ to improve the new product's growth rate in the first few months of sales.

Challenges related to data collection may have contributed to the dearth of research focusing on the dynamic aspects of performance, such as growth trajectories. One difficulty is obtaining data that meet the requirements for a study of change (Singer and Willett 2003): (1) There are three or more waves of data (i.e., data from at least three particular points in time), (2) the value of the dependent variable changes systematically over time, and (3) there is a sensible metric measuring time. In this study, we collected data that meet these requirements from a global, industrial company that provides tools and related products to business customers in various construction industries. The data captured the first 457 days of longitudinal sales for the first product, a new-to-market product, and 304 days for the second product (a line extension). We surveyed salespeople who were responsible for selling these two products in the month preceding each new product launch. After combining the survey data and company records, we were able to create a person–period data set of 308 salespeople (38.5% response rate) for the new-to-market product and a data set of 226 salespeople (28.3% response rate) for the line extension.

The two new products we examine are similar in several aspects to the other products the focal company sells in terms of target markets, sales cycle, and pricing. During the study, salespeople worked independently in their own territories and represented multiple products. Given the similarities between the two products, it is also worth noting several important differences. The new-to-market product represents a breakthrough in product development that employs new technology and greatly enhances the accuracy and performance of previous tools. It has a longer life span and is sold in a larger variety of construction environments. Both its price and feature set are higher than previous solutions, and therefore a strong focus on the value equation is required to sell this new product. In contrast, the line extension was only slightly modified from the previous year's model. It is sold as a durable good with a relatively short life span. Its uses are limited to interior construction, and because of its cost–benefit ratio, it is sensitive to competitive pressures.

In accordance with the sales company's practices, the new products were demonstrated to the sales force before launch. Technical features, marketing strategies, and supporting resources were also presented to the sales force in a series of prelaunch sales meetings. No product-specific bonus was directly linked to the sale of either new product; however, the new products became part of the regular portfolio of products and were a part of the standard compensation plan, which included incentives for exceeding quota.

Measurement

Attitude toward selling a new product. Consistent with Fishbein and Ajzen's (1975) expectancy-value model of attitudes, we measure attitude toward selling the new product as a sum of the salesperson's beliefs (based on attributes such as "the product is easy to sell") about selling each product and the importance weight he or she ascribes to each attribute over salient attributes:

$$AT = \sum_{i=1}^{2} b_i e_i,$$

where AT is the overall attitude toward selling the new product, b_i is the strength of the belief about whether the act of selling the new product has attribute i, and e_i is the evaluation of the pros and cons of attribute i. From interviews with both sales and marketing managers from various industries, we modified Ajzen's (1991) original measures to include the following two attributes: "is easy to sell" and "is fun to sell." We recognize the limitations of a scale with only two items, and therefore we expand on this and suggest remedies in the "Limitations and Further Research" section. The Appendix provides a list of all survey items, and Table 1 presents descriptive statistics of each variable for both products.

Subjective norms toward selling a new product. Consistent with Ajzen's (1991) belief-based measures and Armitage and Conner's (2001, p. 485) meta-analysis, we measure subjective norms with a multi-item measure that captures "global perceptions of social pressure . . . from salient others weighted by the motivation to comply with these groups or individuals." Thus,

$$SN = \sum_{j=1}^{5} NB_j MC_j,$$

where SN are the subjective norms to sell the new product, NB_j is reference group j's normative belief that the salesperson should sell the new product, and MC_j is the motivation to comply with the influence of referent j. In particular, the five reference groups are "my (salesperson's) sales manager," "my (salesperson's) marketing manager," "my (salesperson's) product manager," "my (salesperson's) fellow salespeople," and "top management."

Self-efficacy. Similar to Brown, Jones, and Leigh (2005), we measured self-efficacy with confidence scores. After comparing five different measures of self-efficacy, Lee and Bobko (1994, p. 386) indicate that this type of confidence score is more "consistent with Bandura's (1986) conceptualization of self-efficacy (incorporating both magnitude and strength information)" and is "less cumbersome to operationalize" in practice. Specifically, we asked salespeople to indicate their confidence in their ability to perform "as well as or better than" other salespeople across ten levels of magnitude judgments regarding the proportion of other salespeople in the company whose sales performance on the new product they believed they could exceed (i.e., they could outperform 10% to 99% of the company's sales force in 10% increments). The confidence scores (captured as a 0%–100% level of confidence that they could outperform a given percentage of the total sales force) consist of ratings of how confident the salespeople were for each magnitude judgment. We summed the confidence scores for each salesperson, which constitutes the measure of self-efficacy.

Intention to sell. Before each new product's launch, the company introduced the new product to the sales team in a series of sales meetings. In one of these meetings, we measured each salesperson's intention to sell the new product with three items (for the new-to-market data, α = .945; for the line extension, α = .970). Specifically, we asked the salespeople to indicate how much time, intensity, and overall effort they anticipated putting into selling each new product compared with other salespeople. We adapted the intention-to-sell scale from Brown and Peterson (1994).

TABLE 1
Correlation Matrices and Descriptive Statistics of the Two Product Samples

	SI	AT	SN	SE	QT	TN	CN	CS
Mean (for line extension)	4.53	56.65	159.58	85.05	65.22	9.46	3.48	29.30
Standard deviation	1.47	22.35	55.64	29.23	58.98	8.21	1.08	47.53
Intention (SI)		.45**	.44**	.59**	.34**	.08	–.26**	.31**
Attitude (AT)	.43**		.52**	.20**	.39**	–.028	–.15**	.14**
Subjective norms (SN)	.48**	.35**		.37**	.17**	–.09	–.06	–.03
Self-efficacy (SE)	.44**	.20**	.19**		.11	.23*	–.27	.20*
Quota (QT)	.14*	.08	–.01	.23**		–.19*	.03	.40**
Tenure (TN)	–.02	.04	–.11*	.17**	.32**		–.21*	.09
Customer newness (CN)	–.17**	–.10**	–.05	–.33**	–.28**	–.17**		.01
Cumulative sales (CS)	.28**	.16**	–.03	.24**	.43**	.11*	–.28**	
Mean (for new-to-market)	4.88	52.45	170.84	89.26	20.27	9.71	2.31	5.04
Standard deviation	.99	19.43	52.08	22.66	15.98	7.78	1.28	6.69

*$p < .05$.
**$p < .01$.
Notes: The new-to-market product sample (N = 308) is below and the line extension sample (N = 226) is above the diagonal.

Performance. Using company records, we measured daily unit sales for each salesperson over the initial launch period. Our data sets capture the first 457 days of sales for the new-to-market product and the first 304 days of sales for the line extension. We used daily sales to establish the growth rate of sales for each salesperson.

To control for market conditions and personal factors that may affect each salesperson's performance, we included quota, customer newness, and salesperson tenure in the model as control variables. We took the quotas from company records and established them for each salesperson according to overall sales levels in the territory (they are not specific new product quotas). Salesperson tenure is years of service with the focal company and is a self-reported measure on the survey. We measured customer newness with a three-item scale that captures the salesperson's perceptions of familiarity with the customer for each new product.

Analyses and Results

As Deadrick, Bennett, and Russell (1997, p. 748) note, "longitudinal data are implicitly multilevel and nested," and treating them as such enables researchers to examine "the existence, nature, and causes of within-person performance changes over time." Because we want to understand a continuous outcome and how it changes over time, we employ a method in which time is a predictor rather than an outcome of the study. This leads us to employ individual growth curve analyses using a SAS Proc Mixed procedure to determine patterns and changes in salespeople's sales performance of a new product and to estimate the effects of multiple salesperson-level predictors (Littell et al. 2006). Specifically, following Singer and Willett's (2003) recommendations, we fit two unconditional, multilevel models: an unconditional means model and an unconditional growth model. Then, we used the results to build the foundation for subsequent analyses. To test and understand the nature of our hypothesized effects, we account for an implicit variable in the growth model—namely, time. Although cumulative sales increase as time goes by, we suggest that the sales–time relationship, modeled in Level 1 of our analysis, is further affected by salesperson-level variables in Level 2.

Unconditional Means Model

Typically, the first step of multilevel analysis is to fit an unconditional means model, or a model without any predictors (Singer and Willett 2003). Specifically, the dependent variable is expressed as a linear combination of a grand mean, a series of deviations from the grand mean, and random error. Though substantively uninteresting, the unconditional means model partitions the new product performance variation and provides a baseline with which more complex models can be compared (Singer 1998). Again, we included three control variables (quota, customer newness, and salesperson tenure) in each subsequent set of growth models, but to simplify model presentation, we do not show these variables. The model takes the following form:

(1) Level 1 $Y_{ij} = \beta_{0j} + e_{ij}$,

(1a) Level 2 $\beta_{0j} = \gamma_{00} + \delta_{0j}$.

In this model, Y_{ij}, the ith-day cumulated sales of the jth salesperson, is a linear function of a grand mean (γ_{00}), a deviation of the jth salesperson from the grand mean (δ_{0j}), and a random error term associated with the performance of the ith day of the jth salesperson (e_{ij}). The model decomposes the variation of the new product performance into the variation between salesperson means (τ_{00}) and the variation among days within the salespeople (σ^2) (Singer 1998).

Following the methodological literature, we used a maximum likelihood estimation approach (Littell et al. 2006). The model converged after two iterations, the minimum number of iterations required for convergence (Singer 1998). The covariance parameter estimates for the new-to-market product show that the estimated value of τ_{00} is 62.81 ($Z = 12.37, p < .001$) and σ^2 is 51.36 ($Z = 265.00, p < .001$). As the Z-values indicate, both variance components are significantly different from zero. The estimated intraclass correlation ρ is as follows:

$$\hat{\rho} = \frac{\hat{\tau}_{00}}{\hat{\tau}_{00} + \hat{\sigma}^2} = \frac{62.81}{62.81 + 51.36} = 55.01\%$$

This outcome supports our assertion that there is substantial variance of sales performance at the salesperson level during a new product launch. We found similar results for the line extension, in which the estimated value of τ_{00} is 922.84 ($Z = 10.62, p < .001$) and σ^2 is 397.28 ($Z = 185.04, p < .001$). Thus, the estimated intraclass correlation of the line extension is 69.91%. Given these findings, the ordinary least squares assumption that all observations are statistically independent from one another is likely violated (Berry 1993). Such violation may lead to biased estimates and justifies the use of an individual growth curve modeling approach (Bliese 1998).

Unconditional Linear Growth Model

We then introduced the time variable (i.e., days) and fit an unconditional linear growth model. We centered the time variable on the grand mean, and it had a mean of zero; this is a common approach to facilitate the interpretation of the intercept (Singer 1998). The Level 1 equation estimates the individual salesperson's trajectory of sales growth (β_{1j}) in addition to the mean (β_{0j}). The Level 2 equation simultaneously partitions the two estimates into sample averages and error components. The models are as follows:

(2) Level 1 $Y_{ij} = \beta_{0j} + \beta_{1j}\text{MCDays}_{ij} + e_{ij}$,

(2a) Level 2 $\beta_{0j} = \gamma_{00} + \delta_{0j}$,

(2b) $\beta_{1j} = \gamma_{10} + \delta_{1j}$.

The MCDays variable ranges from 1 to 457 for the new-to-market product (1 to 304 for the line extension) and represents the number of days since the launch of each new product. Because we mean-centered the time variable (MCDays), the intercept of the model reflects the cumulative sales of the new product by an average salesperson midway through the number of days for each product. We could have "centered" days on any point in the data, but in line with Singer and Willett's (2003, p. 52) recommendations, we chose to focus on a centering effect that was easily interpretable and useful for our analytical needs. Because no point in our data is more important than any other in terms of the implications for sales managers (the end of our data set is not the end of sales for the new product), for simplicity we mean-centered our time variable.

Fixed effects. As Table 2 (Model 1a) shows, the intercept (6.558, $p < .001$) is the estimate of the average cumulative unit sales of the new-to-market product, and the slope (.034, $p < .001$) is the estimate of the average slope across salespeople (i.e., the average growth per day). Thus, the average salesperson achieved 6.558 units of sales 229 days after the new-to-market product launch and, on average, increased sales by .034 units per day. Table 2 (Model 1b) presents the results for the line extension. Here, the average salesperson sold 14.660 units 152 days after launch and, on average, increased sales by .109 units per day.

Random effects. We then focused on the random effects by examining the variance–covariance components. Because variance components of both the intercept ($Z = 12.25$, $p < .001$) and the slope ($Z = 261.97$, $p < .001$) are significant for the new-to-market product and the line extension (intercept: $Z = 10.43$, $p < .001$; slope: $Z = 181.73$, $p < .001$), we conclude that variation exists and may potentially be explained by salesperson-level variables (Singer 1998). Using the goodness-of-fit indexes, we compare the fixed-effects model with the random-effects model. The unconditional linear growth model has both fixed and random effects on the intercepts but only fixed effects on the slopes. The difference between the two log-likelihood statistics (i.e., incremental chi-square) suggests model superiority in terms of goodness-of-fit when there is a significantly smaller –2 log-likelihood (Littell et al. 2006). Our results suggest that the random-slope model fits the data better; therefore, we chose random-slope models for subsequent analyses of both products.

Unconditional Nonlinear Growth Model

To examine whether the growth of sales follows the traditional nonlinear relationship suggested by the early stages of the product life cycle (Hauser, Tellis, and Griffin 2006), we added a quadratic term (squared mean-centered days) to the model. Building our model with a strong theoretical background is superior to other possible model structures that may also fit the data but have no theoretical basis (Singer and Willett 2003, p. 240). Using the product life cycle as our theoretical underpinning for model building enables us to make assumptions about the model shape that are theoretically sound for interpreting managerial implications. The results support a nonlinear growth model. First, the linear and quadratic terms are statically significant (see Table 2, Model 2a). Second, the unconditional nonlinear growth model (Table 2, Model 2a) itself is significantly improved compared with the unconditional linear growth model (Table 2, Model 1a) ($\Delta\chi^2 = 753.3$, d.f. $= 1$, $p < .001$). We find a similar pattern of results (Table 2, Model 2b) for the line extension. Therefore, we use the unconditional nonlinear growth model as our basic growth model in subsequent analyses.

A strength of the Proc Mixed procedure is that it enables researchers to compare different structures for the error variance–covariance matrix and identify the best fit. As Littell and colleagues (2006) suggest, the goal is to determine the most appropriate structure based on goodness-of-fit statistics for different error structures and theoretical considerations. Following Singer's (1998) approach, we compared three possible structures: compound symmetry, autoregressive with a lag of 1, and unstructured. We used –2 log-likelihood, Akaike's information criterion (AIC), and Bayesian information criterion (BIC) as the basis for the comparison. The results indicate that the unstructured model had the best fit. Therefore, we employ an unstructured error matrix for all analyses. (Note that using either of the other two error structures would not change our findings because the results were similar, further confirming their stability and robustness.)

Conditional Nonlinear Growth Model

After selecting the unconditional nonlinear growth model with random effects, we added the salesperson-level predictors to investigate whether the new product sales growth varies as a function of these variables. The models are as follows:

$$\text{(3)}\quad \text{Level 1:}\quad Y_{ij} = \beta_{0j} + \beta_{1j}\text{MCDays} + \beta_{2j}(\text{MCDays})^2 + e_{ij},$$

$$\text{(3a)}\quad \text{Level 2:}\quad \beta_{0j} = \gamma_{00} + \gamma_{01}\text{SI} + \gamma_{02}\text{AT} + \gamma_{03}\text{SN} + \gamma_{04}\text{SE} + \gamma_{05}\text{SN} \times \text{SI} + \gamma_{06}\text{SN} \times \text{SE} + \delta_{0j},$$

$$\text{(3b)}\quad \beta_{1j} = \gamma_{10} + \gamma_{11}\text{SI} + \gamma_{12}\text{AT} + \gamma_{13}\text{SN} + \gamma_{14}\text{SE} + \gamma_{15}\text{SN} \times \text{SI} + \gamma_{16}\text{SN} \times \text{SE} + \delta_{1j}, \text{ and}$$

$$\text{(3c)}\quad \beta_{2j} = \gamma_{20} + \gamma_{21}\text{SI} + \gamma_{22}\text{AT} + \gamma_{23}\text{SN} + \gamma_{24}\text{SE} + \gamma_{25}\text{SN} \times \text{SI} + \gamma_{26}\text{SN} \times \text{SE} + \delta_{2j}.$$

As in the unconditional models, we included only the linear and quadratic terms of the time variable (i.e., MCDays and [MCDays]^2) in the Level 1 equation. However, in the Level 2 equations, we included intention to sell (SI), attitude (AT), subjective norms (SN), and self-efficacy (SE) as the salesperson-level predictors. Previous research has consistently shown the direct effects of attitudes on organizational-level performance (e.g., Meyer et al. 2002; Ostroff 1992), meaning that a salesperson's psychology affects how well he or she performs. Thus, we chose to include AT in the model to account for these effects. In addition, we include SN in the model for methodological reasons because it enables us to test interactions in which SN serve as a moderator on other relationships in the model.

To ensure that the fixed effects can be interpreted properly, we centered intention at its grand mean (Singer 1998). Thus, in this model, γ_{00} represents the average intercept in the individual growth model, and γ_{10} and γ_{20} represent the average slopes of the linear and quadratic terms, respectively. We tested the proposed hypotheses by examining the coefficients in the Level 2 equations that correspond to the salesperson-level variables. The sign and significance of γ_{11} reflect the impact of salespeople's selling intentions on the

TABLE 2
Growth Curve Models for Longitudinal New Product Sales Growth Rates

	New-to-Market Product			Line Extension Product		
Predictor	**Model 1a**	**Model 2a**	**Model 3a**	**Model 1b**	**Model 2b**	**Model 3b**
Intercept	6 5581***	6 1036***	6 2890***	14 6595***	14 0325***	15 4091***
Main Effects						
Mean centered days (MCDays)	03431***	03431***	03712***	1088***	08710***	1031***
(MCDays)^2		000026***	000031***		000081***	000059***
Intention			1 2561*			1 9139
Attitude			01333			05641
Subjective norm			– 01206			– 09342
Self-efficacy			01049			07144
Moderating Effects						
Intention × MCDays			005271***			03340***
Intention × (MCDays)^2			– 000000251			000031*
Attitude × MCDays			000084***			001038***
Attitude × (MCDays)^2			– 00000000309***			00003781***
Subjective norm × MCDays			– 00005***			– 00086***
Subjective norm × (MCDays)^2			00000001172***			– 000000575***
Self-efficacy × MCDays			000265***			000737***
Self-efficacy × (MCDays)^2			000000237***			– 000000354***
Subjective norm × intention			– 0096			– 01503
Subjective norm × intention × MCDays			– 00008***			– 00002
Subjective norm × intention × (MCDays)^2			– 0000000983***			000000131***
Subjective norm × self-efficacy			– 00015			– 00357
Subjective norm × self-efficacy × MCDays			– 000000972***			– 00001***
Subjective norm × self-efficacy × (MCDays)^2			000000000352***			00000003163***
Control Variables						
Quota	004269*	004269*	01256**	1599***	1599***	1723***
Customer newness	–1 6265***	–1 6265***	–1 1577***	– 2292	– 2292	1973
Tenure	05181	05181	05010	4084	4084	3075
–2 log-likelihood	834,977 8	834,224 5	697,864 8	434,484 5	434,322 9	360,822 6
Incremental chi-square		753 3	136,359 7		161 6	73,500 3
Degree of freedom		1	18		1	18
p-value		$p <$ 001	$p <$ 001		$p <$ 001	$p <$ 001
N	308	308	308	226	226	226

*$p <$ 05
**$p <$ 01
***$p <$ 001

growth trajectory of the new product Although we did not hypothesize the quadratic effects determined by γ_{21}, we report these findings subsequently and use the coefficients to determine the shape of the nonlinear results Before testing the subsequent hypotheses, we examined the model fit to determine whether the inclusion of these interactions is warranted, we find that the incremental chi-square is statistically significant for both products (new-to-market $\Delta\chi^2$ = 136,359 7, d f = 18, $p <$ 001, line extension $\Delta\chi^2$ = 73,500 3, d f = 18, $p <$ 001)

A salesperson's selling intention is positively related to the cross-level interaction for the new-to-market product (γ_{11} = 005271, $p <$ 001) and the line extension (γ_{11} = 03340, $p <$ 001), indicating that salespeople's selling intentions positively affect the growth rate of new product sales for both products, in support of H_1 To further explain the shape of the growth curves, we examined the interaction with the quadratic term $(\text{MCDays})^2$ (new-to-market γ_{21} = – 000000251, not significant [n s], line extension γ_{21} = 000031, $p <$ 001) and determined that the effect of selling intention on growth rate is linear for the new-to-market product but is nonlinear for the line extension Thus, greater salesperson selling intentions yield higher levels of new product sales growth (and the rate of growth increases at an increasing rate for the line extension)

Antecedents of Selling Intention

Next, we conduct a regression analysis with selling intention as the dependent variable to investigate the relative effects of attitudes, subjective norms, and self-efficacy on selling intentions Because these data are not longitudinal, we employ ordinary least squares regression to address the hypotheses with selling intention as the dependent variable The results in Table 3 show that attitudes (β = 28, $p <$ 01), subjective norms (β = 31, $p <$ 01), and self-efficacy (β = 30, $p <$ 01) are all positively related to the salesperson's selling intention, and the three predictors accounted for a sizable proportion of the variance in selling intention (R^2 = 42 2%) We find similar support for attitudes (β = 20, $p <$ 01) and self-efficacy (β = 36, $p <$ 01) as antecedents to selling intentions on the line extension but no relationship between subjective norms and selling intentions (β = 13, n s) on the line extension These results provide support for attitudes and self-efficacy as antecedents to selling intentions (H_2 and H_{4a}) but only partial support for the effectiveness of subjective norms as an antecedent to selling intentions (H_3) Further analyses with subjective norms as the moderator will help clarify their role in the model and condition the results of these main effects

Interactions on Selling Intentions

We further investigate the role of subjective norms because of the conflicting results reported in prior research, and we hypothesize that they will negatively moderate the positive relationship between attitude and selling intentions The results in Table 3 support this relationship for the new-to-market product (β = – 09, $p <$ 05) but not for the line extension (β = – 02, n s) Therefore, we find support for this negative moderation (H_5) only for the new-to-market product For the negative moderation of subjective norms on the self-efficacy–selling intention relationship, we find no effect on the new-to-market product (β = 05, n s), but the effect holds for the line extension (β = – 14, $p <$ 05) Again, we find partial support for the role of subjective norms as a moderator (H_6), but this time, the moderating effect is only on the line extension We explore explanations for these results and the differences that may arise from product type subsequently

The two moderating effects appear to indicate that the impact of attitude and self-efficacy on intention is contingent on the level of subjective norms To further analyze and demonstrate the effects, we conducted a simple slope analysis following Aiken and West's (1991) recommendations Specifically, in the case of the new-to-market product, we added one standard deviation to the mean-centered subjective norms, created a new product term with attitude, and retested the model Then, we subtracted one standard deviation from the mean-centered subjective norms and repeated the process For each model, the new intercepts and slopes of attitude represent the effects of

TABLE 3
Regression Results of Main and Interaction Effects on Selling Intention

	New-to-Market Product		Line Extension	
Predictors	**Main Effects**	**Interaction**	**Main Effects**	**Interaction**
Attitude (AT)	28**	29**	20**	20**
Subjective norms (SN)	31**	29**	13	15
Self-efficacy (SE)	30**	30**	36**	35**
AT x SN		– 09*		– 02
SE x SN		05		– 14*
Control Variables				
Quota	11*	10*	25*	27*
Customer newness	– 02	– 02	03	04
Tenure	– 11*	– 11*	– 07	– 08
R^2	422	431	413	431
N	308	308	226	226

*$p <$ 05
**$p <$ 01

attitude on selling intentions under low and high levels of subjective norms This analysis resulted in a positive effect of attitude on intention when subjective norms were low ($\beta = 37, p < 01$) and a smaller positive effect when subjective norms were high ($\beta = 21, p < 01$) In the case of the line extension, we repeated the process to examine the effects of self-efficacy on selling intentions under low and high levels of subjective norms The results indicate a significant, positive effect of self-efficacy on intentions when subjective norms were low ($\beta = 55, p < 01$) but no effect when subjective norms were high ($\beta =$ 10, n s) Figures 2 and 3 present these simple slope effects

Interactions on Growth Rate

To test subjective norms' negative moderation of the relationship between selling intention and growth rate (H_7), we return to the growth curve model and interpret β_{15} for both products Models 3a and 3b in Table 2 indicate support for the hypothesis for the new-to-market product ($\beta_{15} = -00008, p < 001$) but not the line extension ($\beta_{15} = -00002$, n s) We investigated the shape of this nonlinear effect by interpreting β_{25} for the new-to-market product and found that as subjective norms increase, the effects of selling intention on growth rate decreases at a decreasing rate for the new-to-market product ($\beta_{25} = -0000000983, p < 001$) Although we found significant results only for the new-to-market product, in partial support of H_7, note that the increase in normative pressure reduces the effectiveness of selling intentions on growth rate, as we expected For line extensions, subjective norms do not interact with selling intentions However, for new-to-market products, subjective norms build intentions but inhibit those intentions from materializing into performance Moreover, other disadvantages to subjective norms are that they diminish the positive impact of attitudes on intentions for new-to-market products and eliminate the positive impact of self-efficacy on intentions for line extensions

Finally, we examine the role of subjective norms in moderating the relationship between self-efficacy and growth rate (H_8) for both products Here, we find support for the two interactions (Table 2, Models 3a and 3b) new-to-market product ($\gamma_{16} = -000000972, p < 001$) and line extension ($\gamma_{16} = -00001, p < 001$) These results confirm H_8 for both products After examining the nonlinear effects, we determined that the negative moderation on both products is decreasing at an increasing rate (new-to-market $\gamma_{26} = 000000000352, p < 001$, line extension $\gamma_{26} = 00000003163, p < 001$)

Discussion, Implications, and Further Research

Discussion of Results

This research examines the relative influence of salespeople's attitudes, perceptions of subjective norms, and self-efficacy on the development of selling intentions and, ultimately, new product performance It also explores the deleterious moderating effects of subjective norms across the model The study examines two data sets (one from a new-to-market product and one from a line extension) that contain both survey and objective data from industrial salespeople Fitting a nonlinear, multilevel, growth model to the data sets provides insights into the impact of salesperson-level psychological variables on the early performance of new products following commercialization To our knowledge, no prior research has identified and explained sources of variance for new product sales based on salespeople's attitudes and intentions

As expected, we identified a nonlinear curve with an accelerating growth rate over time for both products similar to the introduction and growth stages of the product life cycle Using a growth curve modeling approach, we demonstrate that salespeople's selling intentions are a significant predictor of new product performance and result in faster growth rates for both new-to-market products and line extensions Greater salesperson selling intentions yield higher levels of new product sales growth, and more precisely, the rate of growth increases at an increasing rate for line extensions In other words, the impact of selling inten-

FIGURE 2
Subjective Norms' Moderation of the Attitude–Selling Intention Relationship for the New-to-Market Product

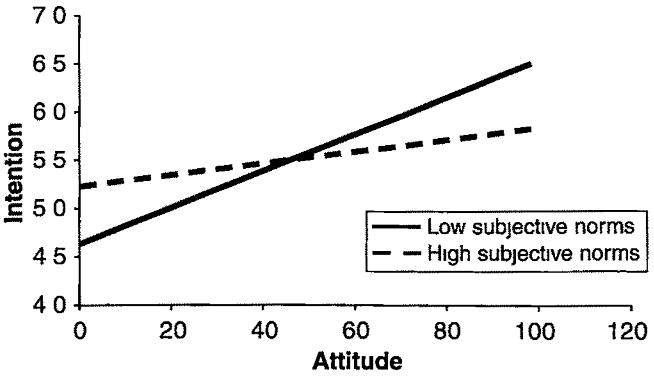
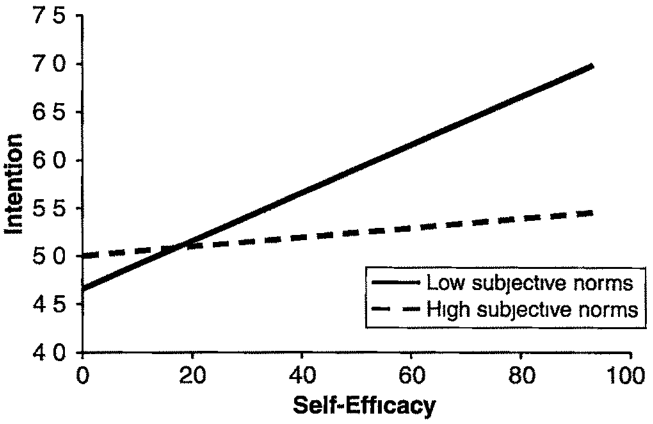


FIGURE 3
Subjective Norms' Moderation of the Self-Efficacy–Selling Intention Relationship for the Line Extension



tions on growth rate is linear for new-to-market products but nonlinear and exponentially positive for line extensions

Consistent with the TPB, we find that salesperson attitudes, subjective norms, and salesperson self-efficacy each contribute to the formation of selling intentions for the new-to-market product, with the exception of subjective norms, these relationships also hold true for the line extension Normative pressure can encourage salespeople to comply with management and state their intentions to sell a completely new and less familiar product, but it is not an effective motivator for building intentions related to relatively routine sales of line extensions Also consistent with the theory, we find that self-efficacy has a direct, positive effect on growth rates for both new products

Because of inconsistent results in prior research, we hypothesized four interactions, with subjective norms acting as a moderating variable, to explore our theory-based assertions that increased subjective norms negatively influence the positive effects of other antecedents on selling intentions and performance In the first two interactions, we examine the moderating role of subjective norms in the formation of selling intentions Notably, subjective norms act as a double-edged sword by diminishing the positive impact of attitudes (for the new-to-market product) and self-efficacy (for the line extension) on selling intentions In the presence of high subjective norms, the motivating influence of a favorable attitude toward selling a new product is diluted for new-to-market products This is consistent with our hypothesis and the literature on intrinsic and extrinsic motivation It appears that the intrinsic satisfaction of the selling task is blunted by the felt pressure of managerial expectations associated with the new product launch

For the more routine sale of a line extension, strong subjective norms reduce the positive impact of self-efficacy on selling intentions In other words, when a salesperson is confident in performing a relatively straightforward task, subjective norms associated with that task can be counterproductive Self-efficacy is formed when a salesperson assesses his or her ability to execute a given task When a manager applies high levels of subjective norms, it may cause the salesperson to question the nature and simplicity of the task This doubt may yield a weaker link between self-efficacy and the formation of selling intentions akin to the looking-glass effect (Benabou and Tirole 2003) Given these negative moderating consequences and the lack of a direct effect between subjective norms and selling intentions for the line extension, it appears that there are few, if any, reasons for managers to use normative pressure to develop selling intentions

In the second two interactions, and perhaps the most instructive to managers, subjective norms negatively moderate the positive relationships between selling intentions and performance and between self-efficacy and performance The results show that salesperson selling intentions are less likely to produce strong growth rates for the new-to-market product under conditions of high subjective norms than under conditions of low subjective norms By examining the quadratic effects for the new-to-market product, we show that the negative moderating effects of subjective norms on the selling intention–performance relationship become more negative over time as their use increases In addition, the negative moderating effects of subjective norms on the self-efficacy–performance relationships occurred for both the new-to-market product and the line extension

These findings corroborate our arguments that perceived pressure can adversely affect a salesperson's ability to influence buyers and that inflated expectations can overwhelm the weak compliance-based effects of subjective norms, leading to diminished salesperson performance Compliance represents a relatively low-level, short-lasting form of persuasion as opposed to high-level, persistent forms of persuasion formed through internalization processes that accompany positive attitudes and feelings of self-efficacy (Ajzen 1991) Therefore, subsequent behaviors adopted from each form will differ in terms of the magnitude, endurance, and conditions under which they are likely to occur (Kelman 1958) Specifically, when effort toward selling a new product results from an internalized process, salespeople are more likely to find the task intrinsically rewarding and put their best and most creative efforts into it In contrast, when effort results from compliance, salespeople will sustain it only for as long as management monitors salesperson behavior, and such monitoring is extremely challenging given field salespeople's relative independence and dispersed locations

Although we failed to find a significant, negative interaction between subjective norms and selling intentions on performance for the line extension, the story remains the same Subjective norms are problematic For line extensions, they fail to generate selling intentions For new-to-market products, they inhibit selling intentions from materializing into performance For both products, their presence attenuates the positive relationship between self-efficacy and performance The results demonstrate that the attitudinal and self-efficacy paths are stronger and more preferable than the normative path when building sales force support for a new product launch

Managerial Implications

This study suggests that managers should focus on increasing the inherent attractiveness of and the sales force's confidence in selling the new product to increase sales volume quickly Despite their legitimate power over salespeople, managers should apply normative pressure judiciously because of its severe drawbacks during a new product launch Managers who use normative pressure may be fooled by signs of compliance in the development of selling intentions, but these same norms will ultimately hurt new product performance Subjective norms have deleterious effects on the positive impacts of attitudes and self-efficacy on selling intentions, and they inhibit the translation of selling intentions and self-efficacy into new product performance Although we found some inconsistencies in the role of subjective norms across the two products, the bottom line remains the same—when managers use increased levels of subjective norms, they slow down new product growth rates

This research suggests that rather than building normative pressure during a new product launch, sales managers should focus on strengthening a salesperson's selling intentions by creating positive attitudes about the launch and heightened feelings of self-efficacy To accomplish this, managers should emphasize the innovative and differentiating aspects of the new product in internal communications, regardless of whether the new product is completely new or a line extension In addition, they should attempt to increase salesperson familiarity with targeted customer segments and appropriate selling techniques through the use of training, selection, or customer relationship management tools Companies are increasingly recognizing the value of internal marketing throughout their organizations (Sartain 2005) Thus, treating salespeople as the first "customers" and reinforcing positive behaviors in early attempts to sell the new product should result in improved attitudes and self-efficacy and, ultimately, better new product performance

Limitations and Further Research

The study confirms the usefulness of the TPB in the context of salespeople selling a new product and linking new product selling performance to important salesperson-level psychological variables However, some caution is required in interpreting the results First, we conducted the study within the domain of a specific organization and industry We collected both survey data and objective sales records from one company Although this provided us with a cleaner environment in which to study the focal effects, by controlling for extraneous effects, replicating this study in different industries and across organizations would be helpful in establishing the generalizability of the findings The effects of industry-specific factors on the relationship between salespeople's psychological variables and new product selling performance are worthy of further study Second, despite the strong impact of attitudes on selling intentions, we were limited to a two-item measure for this construct Future studies should revisit the measure of attitude and employ scales with more items to improve the scale properties

Third, we discovered slight differences in the effects between a new-to-market product and a line extension Intuitively, these differences could be attributable to learning effects because new-to-market products require that the sales force learn new value propositions in selling to customers In this study, we focused on TPB and did not incorporate learning effects Further research should incorporate learning into the model we tested Fourth, our data depict the introductory and growth stages of the new product life cycle Within this period, the sales curve grows rapidly and accelerates However, from a product life-cycle perspective, the sales curve will eventually slow down, flatten, and, ultimately, decline Therefore, a longer time frame is needed to assess salespeople's impact on the maturity and even declining stages of new product performance

In conclusion, this research addresses an important issue facing managers how to motivate salespeople to sell new products By examining the relative influence of attitudes, subjective norms, and self-efficacy, we shed light on how and where managers should devote more resources For scholars interested in new product research, we address an underresearched area worthy of further study the critical role of salespeople in a new product launch and how salespeople's intentions and behaviors influence new product sales

Appendix
Measurement Items

Attitude Toward Selling the New Product

Compared to other products that you sell, to what degree does the NEWPROD possess each of the following attributes? (seven-point Likert-type scale, 1 = "far less than other products," and 7 = "far more than other products")

- Is easy to sell, and
- Is fun to sell

In general, how important is it for a new product to have each of the follow attributes? (seven-point Likert-type scale, 1 = "not at all important," and 7 = "extremely important")

- Is easy to sell, and
- Is fun to sell

Subjective Norms Toward Selling the New Product

Please indicate the extent to which you think each of the following considers selling the NEWPROD to be important (seven-point Likert-type scale, 1 = "not at all important," and 7 = "extremely important")

- My sales manager,
- My marketing manager,
- My product manager,
- Fellow sales manager, and
- Top management

Please indicate the extent to which you are motivated to comply with the wishes of each of the following (seven-point Likert-type scale, 1 = "not at all important," and 7 = "extremely important")

- My sales manager,
- My marketing manager,
- My product manager,
- Fellow sales manager, and
- Top management

Customer Newness

(Seven-point Likert-type scale, 1 = "strongly disagree," and 7 = "strongly agree")

- I have not previously provided NEWPROD to this customer segment
- This customer segment is new to me
- I have substantial knowledge of this customer segment (reverse scored)

Salespeople's Selling Intention

(Seven-point Likert-type scale, 1 = "far less than other salespeople," and 7 = "far more than other salespeople")

- Compared to other salespeople, how much time do you anticipate spending on selling the NEWPROD?

- Compared to other salespeople, how intensely do you anticipate working to sell the NEWPROD?
- Compared to other salespeople, how much overall effort do you anticipate putting into selling the NEWPROD?

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Daniel C. Bello, Constantine S. Katsikeas, & Matthew J. Robson

Does Accommodating a Self-Serving Partner in an International Marketing Alliance Pay Off?

This research examines a firm's performance in an international marketing alliance when it responds to a self-serving partner's exploitive behavior with accommodation, a cooperative response motivated by the firm's commitment to the venture. The authors theorize that a wronged firm's payoff from accommodation depends on its approach to monitoring, either employing overt surveillance or relying on its partner's self-control. Overt surveillance is believed to undermine accommodation's ability to convince a selfish partner that cooperation is beneficial and not inconsistent with its self-interest. In contrast, because no or low monitoring is a relational approach to evaluation, it tends to reinforce accommodation, persuading a competitive partner to reciprocate cooperatively. Data collected from 174 international marketing alliances support the authors' prediction that under low monitoring, accommodation is positively associated with performance in the alliance. Unexpectedly, under high monitoring, performance is greatest under both low and high accommodation. An explanation may lie in accommodation theory's notion that as accommodation increases, a selfish partner transitions from competition to cooperation, ceasing to exploit accommodation and upturning performance.

Keywords: international marketing alliance, accommodation, monitoring, commitment, nonlinear effects

International marketing alliances (IMAs) are cooperative arrangements in which autonomous firms based in different countries pool resources for the joint accomplishment of individual corporate goals (Luo, Shenkar, and Gurnani 2008, Parkhe 1993). Sharing resources and integrating marketing activities in a collaborative (i.e., joint-profit-maximizing) mode enable the partners to accomplish more together than either can alone through unilateral actions (Swaminathan and Moorman 2009). However, alliances are a uniquely fragile organizational form because of internal tensions between the contradictory forces of cooperation and competition. Cooperative behaviors maximize joint returns from complementary resources, but competitive actions maximize an individual firm's share of returns. A venturing firm faces a dilemma because self-serving behaviors may yield the greatest profits and yet are destructive to the alliance's value-creation process, which relies on cooperation (De Rond and Bouchikhi 2004). Balancing these opposing forces and avoiding rivalry are critical for IMAs because "the tension between simultaneous cooperation and competition may be responsible for the high failure rate of strategic alliances" (Das and Teng 2000, p. 86).

Gaining an understanding of how alliances maintain a productive mix of marketing activities is important because an ongoing IMA may be threatened by internal and external uncertainty, which can create governance problems and instability (Varadarajan and Cunningham 1995). Uncertainty is problematic for IMA governance because it creates opportunities for a self-serving partner to act competitively, depriving the collective interests of the alliance (Heide 2003). As a result of goal divergence and other differences, departures from a cooperative, joint-profit-maximizing mode can easily occur in an IMA (Luo 2006). Despite competitive actions, the crucial factor for performance in the IMA is the nature of a firm's response to another's negative, competitive behavior. We propose that the actual impact of a partner's destructive actions on the firm's performance depends on the response of the firm, whose reaction can either worsen or alleviate the effects of competitive acts. A wronged firm's willingness to inhibit its impulses to reciprocate with destructive behavior and instead produce a constructive reaction to its partner's competitive acts is termed "accommodation," which we propose is the key mechanism by which an IMA recovers from self-serving actions that threaten the productive alignment of tasks and resources (Arriaga and Rusbult 1998).

A wronged firm may not react with accommodation but may reciprocate with a competitive response that is just as destructive to the well-being of the relationship and passive in terms of addressing underlying task problems. To explain a wronged firm's reaction, we turn to commitment theory

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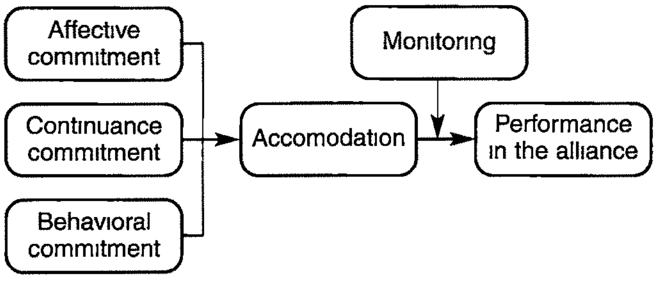
(Kim and Frazier 1997) to identify motivations underlying the decision to respond with accommodation and sidetrack dysfunctional, competitive behaviors Commitment, the strength of business ties, is posited to be the key driver of accommodation because it summarizes the various prorelationship concerns that encourage the choice of an accommodative response to competitive behaviors (Rusbult and Buunk 1993) Nevertheless, a committed firm choosing accommodation is highly vulnerable because its information disclosures, task adjustments, and other compromises may not be reciprocated but rather opportunistically exploited by a competitive partner (Luo, Rindfleisch, and Tse 2007) Theorists (e g , Heide 1994) note that uncertainty in evaluating whether a partner acts correctly can be addressed through monitoring, defined as the governance process that oversees and assesses a partner's actions As Figure 1 shows, we posit that the nature of monitoring within an IMA fundamentally affects partner interactions such that the approach taken to monitoring conditions the impact of accommodation on performance in the alliance [1]

This research attempts to make three contributions to the knowledge of performance-enhancing processes in IMAs First, we introduce accommodation to the IMA performance literature Informed by relationship theory, we specify how emphatic accommodation triggers the transformation of motivation necessary to recast competition as cooperation Furthermore, because of the way accommodation interacts with monitoring, our analysis provides new insights into the complex dynamics linking accommodative behaviors to performance in the alliance

Second, because IMA governance is challenged by pervasive uncertainty, we specify accommodation and monitoring as underlying mechanisms that venturing firms employ to respond to their governance problems Although governance theory notes that firms engage in unilateral or relational responses to uncertainty, we specify how combinations of these response modes either facilitate or hinder IMA productivity That is, we identify particular governance problems as key aspects of alliance management, and the way a venturing firm resolves tensions to compete or cooperate matters the most in terms of its performance in the alliance

FIGURE 1
Conceptual Model



Third, by identifying commitment as a key driver of accommodation, we develop and test a new theoretical approach to understanding the commitment–performance relationship based on a firm's response to its partner's selfish, competitive actions We contribute by specifying unique mechanisms through which different facets of commitment motivate a venturing firm to respond with accommodation to a partner's self-serving behaviors By analyzing the efficacy of different forms of attachment in triggering accommodation, we extend the understanding of how each component of commitment either does or does not alter alliance behavior in a performance-enhancing way

Theoretical Background

Accommodative Response Behaviors

Within our theoretical framework, we view accommodation as a form of response behavior When a firm is dissatisfied with a partner's competitive actions, its response repertoire is defined by the extent to which it reacts actively (by directly addressing the task problem at hand or not) and constructively (by maintaining the well-being of the relationship or not) (Antia and Frazier 2001, Wathne and Heide 2000) A variety of response behaviors have been discussed in the channels and conflict management literature streams For example, Hibbard, Kumar, and Stern's (2001) seminal work on destructive acts in channel relationships identifies a broad set of responses, including disengagement, venting, constructive discussion, and passive acceptance Likewise, research on conflict resolution behaviors identifies a set of responses, including problem solving, compromise, and aggressive reactions (Ganesan 1993, Koza and Dant 2007) When applied to marketing alliances, the literature does not fully account for the key role of response behaviors in relationship governance and in driving performance in these uniquely cooperative–competitive ventures

Because marketing alliances feature relatively high interdependence (Parkhe 1993), passive responses seem less meaningful than and lack the transformational power of active responses Disengagement, venting, and aggressive reactions by a wronged firm also reflect a unilateral approach to governance that not only undermines the joint exploitation of pooled, complementary resources but also weakens the relational climate of the IMA, further discouraging collaborative efforts Consequently, destructive responses fail to advance work tasks of the alliance and social bonds between partners, rendering them impotent in terms of performance Likewise, responses that solely address task issues (e g , constructive discussion, problem solving, compromise) may not enhance social bonds and normative beliefs sufficiently enough to convince a competitive partner that cooperation is not harmful to its self-interest and is crucial to maximizing value creation Although governance is an endogenous aspect of relationships (Ghosh and John 1999), extant analyses of response categories do not account for the way a wronged firm's response alters the state of the relationship and affects the partner's task and social interactions (Dwyer, Schurr, and Oh 1987).

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[1] We focus on the focal firm's performance as a result of its own accommodative behavior This is consistent with the literature (e g , Palmatier, Dant, and Grewal 2007) and was supported by our field interviews

In summary, accommodation is a more inclusive construct than simply seeking constructive discussion and problem solving or avoiding venting and aggressive reactions. Because accommodation entails reacting (active response) in a consistently constructive way to the partner's competitive behavior, it uniquely enhances performance in this fragile organizational form by addressing task problems while maintaining relational bonds. Performance improvements reflect the operational interdependence of alliance partners that results from their need to work together to maximize value from pooled resources. Accommodation as a strategy to motivate partner cooperation is more likely to be attempted and to be successful in an IMA because the venturing firm and partner are so highly interdependent.

Uncertainty Problems in IMAs

Institutional design theory (Carson et al. 1999) suggests that performance in a two-firm IMA stems from the partners' ability to identify and cooperatively implement an activity set that maximizes their joint performance outcomes. High performance occurs when the partners are able to integrate their activities as they deploy resources in novel and increasingly productive combinations. However, achieving productive synergy between partners is threatened by external and internal uncertainty, which creates the twin governance problems of adaptation and evaluation, respectively (Varadarajan and Cunningham 1995). External uncertainty, due to an unpredictable decision environment, can cause unexpected problems that dislodge the alignment of tasks and resources, creating an adaptation problem. Internal uncertainty refers to the difficulty of evaluating the compliance of a foreign partner with task assignments and other role responsibilities in the IMA, creating an evaluation problem (Das and Teng 2000). Unlike domestic alliances, the physical and cultural distances separating IMA partners aggravate these twin problems in a way that can degrade outcomes. Thus, we suggest that high-performance IMAs are able to resolve contradictory tensions to cooperate and compete along both the adaptation and the evaluation aspects of alliance management.

Adaptation and evaluation problems are typically addressed through some combination of unilateral and relational governance processes (Heide 1994; Zhang, Hu, and Gu 2008). Unilateral responses to uncertainty occur when a firm attempts to impose its decisions on another firm by developing rules and directing activities. Such responses tend to be self-serving and competitive, emphasizing solutions that satisfy a firm's own goals and performance requirements (Luo, Rindfleisch, and Tse 2007). In contrast, relational responses occur when a firm's reaction is alliance centered and cooperative, focusing on developing joint policies that address adaptation or evaluation difficulties. Relational responses flow from the parties' mutual interests, motivating a firm to act for the long-term benefit of the system and restrain its competitive tendencies. As Figure 2 shows, any given IMA can be marked by a mix of unilateral and relational response mechanisms because governance is "a heterogeneous phenomenon, . . . within a given relationship, processes from different governance forms can be combined in different fashions" (Heide 1994, p. 81).

Adaptation is of key importance because changing circumstances are impossible to foresee and write provisions for in a formal alliance contract (Dyer and Chu 2003). Disturbances can dramatically alter business requirements, creating task problems and turning once-integrated partner actions into inconsistent and uncoordinated activities. Unless steps are taken to reestablish a productive activity set, severe task problems can permanently lower performance and potentially lead to alliance dissolution (Makino et al. 2007). In a unilateral response to an adaptation occasion, a firm reacts competitively as it develops and imposes on its partner a self-serving solution to task dislocations (i.e., low accommodation). A firm may pursue its self-interest by extracting concessions from and making demands on the partner to effect an adaptation (Luo, Rindfleisch, and Tse 2007). A relational response is marked by accommodation, such that a firm cooperatively attempts to develop a solution through open discussion and compromise while refraining from aggressive and competitive responses (i.e., high accommodation) (Arriaga and Rusbult 1998).

However, in adapting to unexpected task problems, a firm faces an "accommodative dilemma." On the one hand, the firm is motivated to align its tasks with those of the part-

FIGURE 2
Uncertainty in IMAs: Key Problems and Response Processes

Evaluation Problem	Unilateral Response (Adaptation Problem)	Relational Response (Adaptation Problem)
Unilateral Response	1. *Low accommodation* lacks compromise, as a firm effects an adaptation by making demands and extracting concessions from partner *High monitoring* reflects explicit surveillance, as a firm evaluates whether partner implements role responsibilities	2. *High accommodation* seeks compromise, as a firm effects an adaptation through open discussion and negotiation *High monitoring* reflects explicit surveillance, as a firm evaluates whether partner implements role responsibilities
Relational Response	3. *Low accommodation* lacks compromise, as a firm effects an adaptation by making demands and extracting concessions from partner *Low monitoring* lacks surveillance, as a firm believes partner's self-control ensures adherence to role obligations	4. *High accommodation* seeks compromise, as a firm effects an adaptation through open discussion and negotiation *Low monitoring* lacks surveillance, as a firm believes partner's self-control ensures adherence to role obligations

ner to create value for the alliance by identifying the most productive combination of resources On the other hand, internal uncertainty creates an evaluation problem, making it difficult to verify whether the foreign partner complies with agreed-on actions A dilemma is posed for the firm that cooperatively invests in realigning its activities but faces a potentially opportunistic partner that may shirk duties, fail to invest in the alliance, and unfairly appropriate value (Wathne and Heide 2000) Theorists (e g , Heide, Wathne, and Rokkan 2007) note that monitoring procedures of some form are established in exchange relationships to evaluate the extent to which a partner complies with its obligations

To address the evaluation problem, monitoring can be accomplished either unilaterally through explicit surveillance of partner behaviors or relationally "by aligning the incentives of decision makers *ex ante* to reduce the need for performance measurement altogether" (Heide 1994, p 77) In addressing the evaluation problem through a unilateral response, a firm explicitly measures and verifies its partner's role performance by directly monitoring whether agreed-on actions are implemented (i e , high monitoring) Alternatively, in handling evaluation through a relational response, a firm relies on its partner's self-control and prosocial behaviors to ensure voluntary compliance with agreements (i e , low monitoring)

Accommodation and Performance in the Alliance

Theorists (e g , Arriaga and Rusbult 1998) attribute performance gains from accommodation to relational processes triggered when an IMA party engages in a cooperative response to another's competitive action Relationship development theory (Dwyer, Schurr, and Oh 1987, Ring and Van de Ven 1994) argues that a competitive partner may react to strong accommodation by positively reassessing equity and efficiency within the alliance, forcing recognition that cooperation may be beneficial and not necessarily inconsistent with its self-interest That is, a firm's deliberate act of accommodation reveals clearly to the counterpart its intentions of mutuality, instilling a new belief in the superiority of cooperation and replacing opportunism with prorelationship behaviors (Heide, Wathne, and Rokkan 2007)[2] Rusbult and Buunk (1993, p 177, emphasis in original) explain this turning point from a competitive to a cooperative focus "Such preference shifts are referred to as *transformation of motivation*, a process which may lead individuals to relinquish their immediate self-interest and act on the basis of broader interaction goals"

A transformation to cooperate is critical because competitive orientations in alliances negatively affect financial returns by fostering detrimental practices and hindering beneficial outcomes of learning and sharing resources (Luo, Rindfleisch, and Tse 2007) When viewed from a relationship development lens, a partner's mental representation of competition or cooperation is not an exogenous alliance condition but rather an endogenous feature of the evolution of partner interactions and assessments (Ring and Van de Ven 1994) The idea that accommodative responses by a wronged firm can transform a selfish partner into a collaborator "represents a major transition in how the parties regard one another," enhancing the value-creation process (Dwyer, Schurr, and Oh 1987, p 15) Thus, a firm's accommodation can stimulate relational interaction patterns and secure timely inputs from both sides, such prosocial behavior is crucial to enhancing the firm's performance in these highly interdependent alliances (Sivadas and Dwyer 2000)

However, accommodation is not blind but rather highly selective and is granted only to a partner to whom the firm is highly committed (Macneil 1980) As we show subsequently, accommodating a selfish partner reflects an underlying belief that the alliance will prove to be a long-lasting, unified partnership Given a firm's commitment to the IMA, its prosocial reaction to negative behavior is consistent with expectations that the partner will recognize the utility of a cooperative, joint approach to alliance work and transform its self-serving motivation by reciprocating to the accommodation (Dwyer, Schurr, and Oh 1987) We suggest that emphatic accommodation is a crucial but highly selective behavioral mechanism that shifts performance in the alliance to a higher level

Importantly, the relationship between a venturing firm's accommodative behavior and its performance in an IMA may be more complex than a simple positive link As a firm engages in relational behavior that is increasingly accommodative, the partnership is better able to develop solutions to task problems through a more effective problem-solving dialogue Increased accommodation signals a relational intent and also provides the information and ideas needed in the partnership to identify solutions to problems, thus driving better performance Notably, the productivity fostered by accommodation is unlikely to have a straightforward, linear impact on performance in the IMA but will tend to increase rapidly as the firm engages in more open discussion That is, at high levels of accommodation, theorists (e g , Rusbult and Buunk 1993) note that the self-serving partner's transformed motivation increasingly yields beneficial, constructive behaviors that rapidly increase performance in the IMA Thus, accommodation yields performance gains at a nonlinear rate because partners are increasingly capable of synergistically integrating and optimizing their activities as accommodation rises, yielding much greater outcomes for the firm

H_1 The positive association between a venturing firm's level of accommodation and its performance in the alliance becomes greater as accommodation increases

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[2] Our notion that a self-serving partner transitions from competition to cooperation is consistent with the partner's changing microlevel social beliefs about the IMA context Heide, Wathne, and Rokkan (2007, p 427) define a microlevel understanding as "one party's belief about 'salient relationship issues' in the interaction with another exchange partner," noting that changing beliefs can increase or decrease opportunism In the IMA setting, consistent accommodation alters a self-serving partner's microlevel beliefs about the alliance such that it accepts the idea that cooperation is in its self-interest and ceases to exploit accommodative acts, potentially enhancing the wronged firm's performance in the alliance

Monitoring, Accommodation, and Performance in the Alliance

In terms of the uncertainty problem of evaluating a partner's compliance with role responsibilities, a venturing firm's response can range from explicit, unilateral monitoring to a relational approach that lacks overt surveillance (Heide 1994) We suspect that the nature of monitoring acts as a boundary condition, making the link between accommodative behavior and performance in the IMA stronger or weaker This occurs not only because a firm's explicit monitoring tends to shift tasks toward its self-defined notion of role responsibilities but also because the firm is highly intrusive into a partner's operations, potentially driving a wedge into cooperative interaction and creating resentment (Antia and Frazier 2001)

Effect of high monitoring A unilateral response to the evaluation problem triggers a complex dynamic between partners, altering the performance effects of the firm's approach to adaptation Because overt monitoring signals mistrust and interferes with partner activities, it changes the impact of accommodative responses As we show subsequently, governance mechanisms yield a complex relationship between accommodation and performance in the alliance under high monitoring

When a firm exhibits low accommodation and high monitoring, it uses unilateral approaches to respond to both adaptation and evaluation problems (see Cell 1, Figure 2) Disturbances misaligning tasks are addressed without accommodation as the firm fails to compromise, instead pressing its partner for concessions and relief from existing agreements Seeking an advantage by not entering into an open discussion, the firm withholds relevant information and does not reveal its true concerns (Luo, Rindfleisch, and Tse 2007) In such competitive circumstances, a firm also monitors its partner, using surveillance to ensure compliance with its demands When the firm believes that the partner is unlikely to complete necessary tasks in a nonopportunistic manner, high monitoring detects shirking of assigned duties Through a consistently unilateral approach to governance, performance in the IMA tends to be moderate because strong management by a firm ensures that tasks are coordinated and that operations are conducted as planned Strong unilateral governance also benefits the competitively oriented firm Its lack of accommodation restricts opportunities for the partner to act exploitatively, and its surveillance detects opportunistic acts if any should occur

Under conditions of high monitoring, a firm that relaxes its lack of accommodation by compromising may be viewed skeptically by its partner Given that unilateral, competitive mechanisms largely govern the IMA, attempts to accommodate will likely be perceived as inconsistent with alliance procedures and a manipulative extension of the firm's unilateral behavior to selfishly pursue its own gain (Antia and Frazier 2001) Under high monitoring, increasing levels of accommodation are not credible shifts toward or signals of relational governance and do not yield a performance-enhancing transformation of motivation Rather, the alliance remains competitively unilateral, and a firm's accommodative acts tend to be quickly exploited opportunistically by the partner (Wathne and Heide 2000), lowering the firm's performance

> H_{2a} Under conditions of high monitoring, a venturing firm's level of accommodation is negatively associated with its performance in the alliance

Effect of low monitoring Low monitoring reflects a relational response to evaluation because a firm does not engage in overt surveillance, instead, it recognizes that the partner's self-control ensures adherence to role obligations (Heide 1994) By avoiding explicit interventions into a partner's operations, a firm's lack of monitoring does not destabilize a cooperative climate or sidetrack the role performance of its counterpart (Bello and Gilliland 1997) Furthermore, low monitoring influences the nature of the accommodation–performance relationship

We propose that an IMA governed by a combination of low monitoring and low accommodation will yield relatively low performance (Cell 3, Figure 2) With little or no accommodation, the key mechanism enabling the alliance to develop optimal integrative activities is absent By failing to engage in productive dialogue and compromise, the firm does not contribute to solutions to task problems, rather, it imposes competitively oriented solutions that improve its immediate position but do not necessarily optimize performance in the IMA Furthermore, a lack of surveillance greatly inhibits a firm's ability to discern emerging opportunism should its partner unfairly appropriate benefits and shirk its responsibilities Consequently, a firm employing a hybrid system of unilateral responses to adaptation difficulties (i e , low accommodation) but relational responses to evaluation problems (i e , low monitoring) will suffer substantial performance penalties

In contrast, we expect that a firm addressing both adaptation and evaluation difficulties through relational governance mechanisms will attain high performance (Cell 4, Figure 2) Our framework predicts such outperformance because productive activity sets are achieved by partners under cooperative conditions, in which these sets are most easily developed and implemented (Carson et al 1999) High accommodation enables the parties to identify task assignments that best use each firm's competencies and resources, through discussion and compromise, the firms are able to integrate their activities in a cooperative way that increases IMA outcomes Likewise, low monitoring implies that this aspect of the partnership is relationally governed such that tasks are self-monitored Because of the relational nature of evaluation, disruptive interventions are minimized because role activity is not subjected to explicit surveillance Thus, we posit that under low monitoring, there is a positive link between a firm's accommodation and performance in the IMA Because a lack of explicit surveillance already presents some relational mechanisms in these ventures, the scope of relational elements is enlarged for high-accommodation alliances, further strengthening performance

> H_{2b} Under conditions of low monitoring, a venturing firm's level of accommodation is positively associated with its performance in the alliance

Commitment and Accommodation

Rather than being naive, accommodation is highly discerning and selectively granted to partners to which a firm is strongly committed. Commitment is a multicomponent construct that reflects various bases of attachment to an alliance partner (Gilliland and Bello 2002). Anderson and Weitz (1992, p. 18) propose that commitment is mutual such that "each party's commitment is affected by the perceived commitment of the other party." Empirically, they find (p. 29) that channel partners perceive similar levels of commitment, reflecting a process of signaling and reciprocation, leading to a "correspondence between the commitment levels." In an alliance context, this mutuality of commitment suggests that a committed venturing firm, perceiving its partner to be similarly committed, will be motivated to accommodate, believing that its relational act will be reciprocated.

The complex nature of commitment in an interfirm setting reflects three bases for a venturing firm's ties: affective, continuance, and behavioral commitment (Kim and Frazier 1997). Anderson and Weitz (1992) combine these facets into a global measure of commitment in their study of commitment mutuality, leaving unexamined the possibility of differential effects of each facet. Unique effects are likely given the distinctive nature and function of each facet of the attachment bond. An affective tie is a sense of unity and identification with the alliance partner, a continuance tie is recognition of and desire for an enduring relationship, and a behavioral tie is provision of extra effort to help the functioning of the IMA (Kumar, Scheer, and Steenkamp 1995). Because each commitment facet reflects a distinct state of attachment to an IMA, we suggest that each provides a venturing firm with a different incentive to respond with accommodation.

Affective commitment motivates accommodation because the wronged firm will view its positive response as benefiting the alliance and itself since it identifies with the IMA. An intensified sense of interconnectedness with the partner is consistent with the notion of collective benefits. Even when facing a partner's competitive behavior, it is likely that the committed firm's expectation of mutuality will determine that an accommodative response is in both parties' best interests (Menzies-Toman and Lydon 2005). Continuance commitment would stimulate the desire, borne out of pragmatism, to enhance and safeguard IMA unity (Gilliland and Bello 2002). Because the future casts a shadow on current actions, accommodation is encouraged from the recognition that any costs to current self-interest are balanced over time in light of the partner's expected reciprocation. Behavioral commitments further bond the firm to the partner because sunk investments lose value if the IMA should end, creating an incentive for the firm to strengthen the relationship (Frazier et al. 2009) and accommodate. This facet is behaviorally anchored because providing substantial aid aligns self-interest with the alliance, raising its salience. Thus, expectations of similarity in the partner's attachment bonds (Anderson and Weitz 1992) suggest that each aspect of commitment can affect a firm's reactions by inhibiting destructive responses and motivating constructive acts to bring about a beneficial alignment of the partner's activities.

> H_3: The higher a venturing firm's level of (a) affective commitment, (b) continuance commitment, and (c) behavioral commitment, the higher is its level of accommodation in an IMA.

Method

Research Setting

The empirical context is IMAs of U.S., Western European, and Far Eastern firms with U.K. counterparts. The unit of analysis is the IMA venture, including equity and nonequity joint ventures because both entail partner integration and interdependence (Luo 2005). The IMA should involve partners' coordination in one or more marketing aspects (e.g., jointly developing, selling, and/or promoting products) but may extend into other areas, such as training and production (Swaminathan and Moorman 2009). We included both horizontally integrated partnerships between competitors and vertically integrated supplier–manufacturer partnerships. From prestudy interviews, we excluded manufacturer–overseas distributor deals because they tend to convey a more arm's-length form of interaction. We also excluded not-for-profit alliances because of their idiosyncratic policies. Our study focuses on two-parent IMAs because ventures with more than two parties involve complicated exchanges. We used a minimum operating duration of one-and-a-half years as a criterion for IMA inclusion to enable performance to reach stability (Lyles and Baird 1994).

Questionnaire Development

Following a thorough literature review, we conducted in-depth interviews with nine senior alliance managers to better understand the phenomena of interest, to capture any nuances of the constructs overlooked in the literature review, and to ensure that the measures were relevant. We used Zaichkowsky's (1985) procedure to ascertain content validity. We involved seven academics familiar with alliance research as expert judges to assess whether each scale item is representative of the particular construct or dimension. For accommodation, which we treated as a formative construct, the judges concluded that the items thoroughly captured the construct's domain of content. We developed a draft questionnaire, which we refined in personal interviews with seven senior IMA executives. Measures, response scales, and internal consistency estimates appear in the Appendix.

The field interviews, along with previous studies on interfirm conflict harmonization and relationship maintenance behaviors (e.g., Hibbard, Kumar, and Stern 2001), were instrumental in operationalizing accommodation. The fieldwork revealed that firms' accommodative responses to interpartner differences in IMAs occur in the form of deploying constructive behaviors and avoiding destructive actions. These insights suggest that a formative perspective is theoretically appropriate for assessing accommodation (Jarvis, Mackenzie, and Podsakoff 2003). We used a ten-item index to tap the domain of accommodation Each item represents a distinct aspect of the construct—that is, these behaviors are manifestations of accommodation (Bollen and Lennox 1991)

We also followed Diamantopoulos and Winklhofer's (2001) procedures to assess the validity of our accommodation index Multicollinearity among the ten indicators constituting the index did not appear to pose a problem, the highest variance inflation factor was 2 63 Furthermore, to evaluate the external validity of the measure, we estimated a MIMIC (multiple indicators and multiple causes) model Because of the identification problem associated with specifying a set of causal indicators (Jarvis, Mackenzie, and Podsakoff 2003), we used two global items that summarize the essence of the accommodation construct (i e , "Fix things with the partner so as to better align the two sides' activities and goal achievement in the alliance" and "Adopt a competitive, less accommodative stance in relation to the partner" [reverse-scored item]) Estimation of the model produced an excellent fit to the data ($\chi^2_{(9)} = 13\ 45$, $p = 14$, comparative fit index [CFI] = 99, nonnormed fit index [NNFI] = 98, and root mean square error of approximation [RMSEA] = 05)[3]

Data Collection

We used three sources to develop our sampling frame *Financial Times* Discovery, *Financial Times* McCarthy, and the U K Department of Trade and Industry International Business News We identified 598 IMAs for possible inclusion We contacted the U K partner in each of these IMAs by telephone to ensure that the alliance was still active, to determine whether the alliance met our IMA definition and eligibility criteria, to prenotify the firm about the research, and to identify the most appropriate (key) informant The literature (e g , Aulakh, Kotabe, and Sahay 1996) suggests that the individual alliance manager is capable of producing valid reports After telephone contact, we identified 301 potential respondents (and IMAs) who were eligible for and expressed an interest in the study We dropped 297 alliances because they ceased operations (180 IMAs), did not conform to our IMA definition and eligibility criteria (59 IMAs), or had corporate policy restrictions that precluded provision of information necessary to assess their eligibility (58 IMAs)

We used personal interviews with alliance managers to collect the data In this way, we ensured that the respondents were responsible for the IMA ventures under study, fully understood the purpose of the research and questions asked in the interview, and focused on the specific IMA venture while excluding other alliances of the parent firms We sent all 301 potential informants a letter that outlined the nature of the study and requested their participation Of these, 179 alliance managers participated We dropped five questionnaires because they failed post hoc informant quality tests Thus, we achieved a satisfactory response rate of 58% (174 of 301 IMAs) Most respondents (73%) were at the director level, and the remainder (27%) were senior business managers

Our sample alliances had an average age of four years and an average size of 82 employees Seventy (40%) partners were from Western Europe, 62 (36%) were from the United States, and 42 (24%) were from the Far East There were 124 (71%) horizontal alliances and 50 (29%) vertical alliances There were 109 (63%) equity joint ventures and 65 (37%) nonequity joint ventures A total of 113 IMAs (65%) operated in goods sectors, and the other 61 (35%) fell into the services sector We compared means of the study constructs between equity and nonequity IMAs and between goods and services IMAs and detected no significant differences Furthermore, we compared our sample IMAs with a group of 41 randomly selected (1 in 3 of the 122) nonrespondents in terms of alliance age, governance structure, and industry sector and found no differences Thus, nonresponse bias does not appear to pose a problem

To validate our key informant data, the final part of the questionnaire assessed the interviewee's (1) knowledge of IMA activities, (2) involvement in IMA decisions, and (3) confidence in answering the questions, using a seven-point scale in each case (Heide and Weiss 1995) We dropped five questionnaires with scores of 4 or below on any of these items The mean rating for informant quality was 6 34 We were also able to obtain data from a competent second informant for 20 IMAs Reports of the two raters were significantly correlated, ranging from 69 ($p < 01$) for behavioral commitment to 78 ($p < 01$) for monitoring The mean correlation between the two raters was 74, which compares well with other studies using secondary respondent data to corroborate perceptions of primary informants (e g , Morgan, Kaleka, and Katsikeas 2004)

Analysis and Results

Measure Validation

We ran two measurement models (see Table 1) The first contained 17 items that tapped the first-order reflective constructs affective commitment, continuance commitment, behavioral commitment, and monitoring and one composite for the accommodation index The error term for accommodation was set at 10 The second model tested performance in the IMA as a second-order construct comprised of three first-order factors effectiveness, the extent to which the firm's IMA goals and objectives are achieved, efficiency, the ratio of the firm's IMA performance outcomes to its inputs required to achieve them, and responsiveness, the ability of the firm to make adjustments in the IMA in response to environmental changes (Katsikeas, Leonidou, and Morgan 2000) We used the elliptical reweighted least squares estimation procedure in EQS, which produces unbi-

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[3] Accommodation contains consistently positive reactive behaviors and cannot coexist with opportunistic actions We found a negative correlation (r = – 64) between a firm's accommodation and its opportunism (four-item scale based on Parkhe [1993]), in support of this assumption In addition, accommodative actions are perceived as reactive because they make the focal firm's concerns transparent We found a positive correlation (r = 55) between accommodation and communication quality between the IMA partners (five-item scale adapted from Mohr and Spekman [1994]), which lends support to this assertion This evidence enhances confidence in the external validity of our accommodation construct

TABLE 1
Measurement Models

A: Measurement Model 1: First-Order Construct Measurement Summary: Confirmatory Factor Analysis

Factors and Items	Standardized Loading	t-Value
Affective Commitment		
AFFCOM1	79	10 59
AFFCOM2	82	11 10
AFFCOM3	91	12 92
AFFCOM4	86	11 96
Continuance Commitment		
CONTCOM1	94	14 03
CONTCOM2	94	14 09
CONTCOM3	91	13 39
CONTCOM4	87	12 39
CONTCOM5	83	11 43
Behavioral Commitment		
BEHCOM1	67	8 07
BEHCOM2	73	8 96
BEHCOM3	81	10 33
BEHCOM4	74	9 14
Monitoring		
MONITOR1	66	8 05
MONITOR2	85	11 19
MONITOR3	80	10 32
MONITOR4	71	8 83
Accommodation		
ACCOM1	91	12 87

Fit Statistics
$\chi^2_{(126)} = 205\ 94$, $p <$ 001, NFI = 93, NNFI = 971, CFI = 97, and RMSEA = 06

B: Measurement Model 2: Performance in the Alliance Measurement Summary: Second-Order Confirmatory Factor Analysis

Factors and Items	Standardized Loading	t-Value
Effectiveness (First-Order Factor)		
EFFEC1	76	—[a]
EFFEC2	78	8 58
EFFEC3	81	8 79
Efficiency (First-Order Factor)		
EFFIC1	76	—[a]
EFFIC2	75	8 74
EFFIC3	91	10 50
Responsiveness (First-Order Factor)		
RESP1	64	—[a]
RESP2	73	7 00
RESP3	88	7 84
RESP4	69	6 76
Performance in the Alliance (Second-Order Factor)		
Effectiveness	79	7 26
Efficiency	97	8 47
Responsiveness	75	6 19

Fit Statistics
$\chi^2_{(32)} = 47\ 07$, $p =$ 042, NFI = 97, NNFI = 98, CFI = 99, and RMSEA = 05

[a] Item fixed to set the scale

ased estimates for multivariate normal and nonnormal data (Sharma, Durvasula, and Dillon 1989)

In the first measurement model, the chi-square statistic is significant ($\chi^2_{(126)} = 205\ 94$, $p <$ 001), as we would expect because of its sensitivity to sample size The other fit indexes (normed fit index [NFI] = 93, NNFI = 96, CFI = 97, and RMSEA = 06) suggest that the model fits the data well Items load heavily on their posited constructs (t-values > 8 04), revealing convergent validity Likewise, the second-order measurement model for performance exhibits a good overall fit ($\chi^2_{(32)} = 47\ 07$, $p =$ 042, NFI = 97, NNFI = 98, CFI = 99, and RMSEA = 05), with large and significant loadings (t-values > 6 18)

We assessed discriminant validity using a chi-square difference test that involves collapsing each pair of constructs into a single-factor model and comparing its fit with that of a two-factor model (Anderson and Gerbing 1988) In each case, a two-construct model had a better fit than a one-construct model Furthermore, the average variance extracted for each reflective construct was greater than the squared correlation between that construct and any other construct in the model (Fornell and Larcker 1981) Table 2 shows the correlation matrix and summary statistics of the measures Composite reliability scores for all reflective scales range from 77 to 96 (see the Appendix)

Structural Model

We estimated a structural model containing linear and quadratic terms pertaining to H_1 and H_3 We assessed the conditioning role of monitoring (H_{2a} and H_{2b}) using subgroup analysis We employed a parsimonious estimation approach (e g , Settoon, Bennett, and Liden 1996) to reach a sample size-to-parameter ratio greater than five, which is recommended as sufficient to attain reliable parameter estimates (Bentler 1995) Furthermore, scholars (e g , Cadogan, Kuivalainen, and Sundqvist 2009) recommend the use of single indicants for models involving nonlinear terms Thus, we used composite measures as manifest indicators for each latent construct by averaging the items of each scale, index, or subscale For the reflective scales of affective, continuance, and behavioral commitment, we set the path from the latent construct to its composite indicator at the square root of the scale's reliability and the error term at (1 – reliability) × construct variance (Joreskog and Sorbom 1982) We assumed that the formative and control variables had a reliability of 90 for purposes of model estimation (Anderson and Gerbing 1988) We calculated the loading and error variance of the accommodation quadratic term using Ping's (1995) equations Because multiplicative terms raise the possibility of multicollinearity and Type II errors, we mean-centered and standardized accommodation before calculating its quadratic term (Nygaard and Dahlstrom 2002)[4]

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[4] We included two control variables alliance size (i e , IMA employee number) and duration Large alliances may enjoy advantages over small alliances in terms of securing partner firms' contributions of resources necessary to achieve operational effectiveness and efficiency, and alliances become more successful over time because partners have greater opportunity to coordinate joint actions

TABLE 2
Correlations and Summary Statistics

Measures	1	2	3	4	5	6	7	8	9	10
1 Affective commitment										
2 Continunce commitment	53									
3 Behavioral commitment	44	22								
4 Monitoring	– 25	– 24	– 01							
5 Accommodation	53	40	42	– 34						
6 Effectiveness	51	23	27	– 24	44					
7 Efficiency	57	31	34	– 24	44	64				
8 Responsiveness	47	30	40	– 20	46	50	60			
9 Alliance duration	– 06	– 12	– 10	02	– 15	02	– 09	– 09		
10 Alliance size[a]	09	02	03	– 11	01	12	04	01	28	
Summary Statistics										
Range	1 0–7 0	1 0–7 0	1 0–7 0	1 0–7 0	2 2–7 0	1 0–7 0	2 2–7 0	1 5–7 0	1 5–35 0	1 1–10 8
Number of items	4	5	4	4	10	3	3	4	1	1
M	5 02	5 22	5 50	3 10	5 36	5 30	5 09	5 09	3 96	4 41
SD	1 49	1 72	1 10	1 37	74	1 21	1 05	1 10	4 49	2 09

[a] We used a logarithmic transformation to reduce the variance (Merchant and Schendel 2000)

Notes n = 174, correlations greater than 14 or less than – 14 are significant at the 05 level

TABLE 3
Structural Model Results

Structural Relationships	Theoretical Model[a]		Modified Model[b]	
	Estimate	t-Value	Estimate	t-Value
Hypothesized Links				
Accommodation → performance in the alliance	68	6 54**	32	2 87**
Accommodation-squared → performance in the alliance	24	2 42*	24	2 63**
Affective commitment → accommodation	42	2 74**	37	2 36*
Continuance commitment → accommodation	13	1 05	15	1 24
Behavioral commitment → accommodation	26	2 14*	26	2 04*
Control Variables				
Alliance duration → performance in the alliance	00	– 02	00	– 02
Alliance size → performance in the alliance	10	1 10	06	74
Affective commitment → performance in the alliance			54	4 56**
Split Group Moderator Test[c]				
High-Monitoring Group				
Accommodation → performance in the alliance			11	78
Accommodation-squared → performance in the alliance			34	2 66**
Low-Monitoring Group				
Accommodation → performance in the alliance			55	3 59**
Accommodation-squared → performance in the alliance			04	30

*$p < 05$

**$p < 01$

[a] $\chi^2_{(31)} = 69\ 28$, $p < 01$, NFI = 86, NNFI = 88, CFI = 92, and RMSEA = 08

[b] $\chi^2_{(30)} = 46\ 58$, $p = 027$, NFI = 91, NNFI = 95, CFI = 96, and RMSEA = 06

[c] Groups are split at the median level of monitoring

Table 3 (see "Theoretical Model" columns) shows standardized estimates, t-values, and significance levels for the structural paths The results ($\chi^2_{(31)} = 69\ 28$, $p < 001$, NFI = 86, NNFI = 88, CFI = 92, and RMSEA = 08) suggest a moderate model fit Examination of the modification indexes reveals a significant path that had not been theoretically specified (Hoyle and Panter 1995) Freeing the affective commitment → performance in the alliance path yielded a significant test statistic (t = 4 56, $p < 01$) We initially specified that any effect of commitment facets on performance would be indirect, through accommodation This path is consistent with prior research (Luo 2002), and its addition (Table 3, modified model $\chi^2_{(30)} = 46\ 58$, $p = 027$, NFI = 91, NNFI = 95, CFI = 96, and RMSEA = 06) does not disturb the significance of the hypothesized paths The modified model offers a better fit to the data ($\Delta\chi^2_{(1)} = 22\ 70$, $p < 01$), and thus we used it to test the main effects

Main effects The results suggest that except for one path, which we found to be nonsignificant, the relationships are significant and in the expected direction The increasing positive slope (concave upward) for the accommodation–performance link predicted in H_1 is supported, both accommodation (t = 2 87, $p <$ 01) and accommodation-squared (t = 2 63, $p <$ 01) are associated positively with performance in the alliance (Aiken and West 1991) Affective (t = 2 36, $p <$ 05) and behavioral (t = 2 04, $p <$ 05) commitment are related positively to accommodation, in accordance with H_{3a} and H_{3c}, respectively The results suggest that continuance commitment is not linked to accommodation (t = 1 24, $p >$ 05), providing no support for H_{3b} The squared multiple correlations for accommodation and performance in the IMA are 42 and 66, respectively[5]

Although our framing of continuance commitment as a driver of relational outcomes is in line with prior research (e g , Noordewier, John, and Nevin 1990), others (e g , Anderson and Weitz 1989) treat expectation of relationship continuity as an ultimate outcome We reran our analysis with continuance commitment as an outcome of performance, which produced moderate fit indexes ($\chi^2_{(30)}$ = 63 32, $p <$ 001, NFI = 87, NNFI = 89, CFI = 93, and RMSEA = 08) A models comparison test suggests that our modified model offers a better fit ($\Delta\chi^2_{(0)}$ = 16 74, $p <$ 01) than this rival

Moderation effects We divided the data (median split) into low- and high-monitoring groups We ran two models restricted (i e , imposing equality constraints on the accommodation → performance and accommodation-squared → performance paths between the two groups) and nonrestricted (i e , permitting all parameters to vary between the groups) For the low- versus high-monitoring groups, the unconstrained model yields $\chi^2_{(60)}$ = 64 28 ($p =$ 33), while the constrained model yields $\chi^2_{(62)}$ = 72 77 ($p =$ 16) The significant $\Delta\chi^2_{(2)}$ = 8 49 ($p <$ 05) between the two models supports the conditioning effect of monitoring on the accommodation–performance link In the high-monitoring group, the accommodation → performance path is not significant (t = 78, $p >$ 05), but accommodation-squared is associated positively with performance in the alliance (t = 2 66, $p <$ 01) Thus, we find a U-shaped relationship (Aiken and West 1991), not the negative link predicted in H_{2a} In the low-monitoring group, accommodation positively affects performance (t = 3 59, $p <$ 01), while accommodation-squared is not related to performance (t = 30, $p >$ 05), in support of H_{2b} Other structural paths are stable across the two groups The observed U-shaped relationship in the high-monitoring group has a turning point with a value of 5 24 for accommodation

Assumptions check Two assumptions underpin the role of monitoring First, the influence of monitoring on the accommodation-squared → performance link assumes that the firm might believe that monitoring is necessary and also is able to evaluate accurately its partner's behaviors. However, the power of a contract to police competitive acts relies on the notion that the partner's behavior is observable and verifiable (Argyres and Mayer 2007) Similarity between the firms makes the partner's actions more readily interpretable Inferences about what managers in the other firm are doing tend to be more accurate Thus, we tested for conditioning influences of similarity (a five-item index, modified from Johnson and colleagues [1996]) on the quadratic part of the accommodation–performance link For low- versus high-similarity groups (median split), the unconstrained model yields $\chi^2_{(60)}$ = 84 05 ($p =$ 02), and the constrained model yields $\chi^2_{(61)}$ = 90 81 ($p <$ 001) The significant $\Delta\chi^2_{(1)}$ = 6 76 ($p <$ 01) supports the conditioning effect of similarity for the accommodation-squared → performance path In the low-similarity group, the accommodation-squared → performance link is not significant (β = 00, t = 02, $p >$ 05), while in the high-similarity group, accommodation-squared is related positively to performance (β = 47, t = 2 03, $p <$ 05), all other paths remain stable Thus, the curvilinear effect observed for high (rather than low) monitoring is also present for high (rather than low) similarity This lends support to the assumption that monitoring can effectively interpret partner behaviors and serve as a solution to the evaluation problem in IMAs

Second, because we posit that in the absence of monitoring firms handle evaluation through a relational response, we checked for differences in institutional trust between the low- and high-monitoring groups Institutional-based trust production occurs through a firm's institutionalization of values and norms that constitute the ethics of the relationship (three-item scale based on Doney and Cannon's [1997] scale) The results reveal that institutional trust (t = 2 88, $p <$ 01) is significantly higher in the low-monitoring group than in the high-monitoring group, reinforcing our conceptualization

Mediation effects To investigate a possible mediating role for accommodation, we tested three additional structural models, following Baron and Kenny (1986) Model 1 yielded significant results for affective commitment → accommodation (β = 42, t = 3 40, $p <$ 01) and behavioral commitment → accommodation (β = 30, t = 3 11, $p <$ 01) but a nonsignificant result for continuance commitment → accommodation (β = 15, t = 1 23, $p >$ 05) In Model 2, affective commitment and behavioral commitment affect performance in the alliance (β = 68, t = 6 73, $p <$ 01, and β = 19, t = 2 21, $p <$ 05, respectively), while continuance commitment has no such influence (β = 02, t = 19, $p >$ 05) Model 3 yielded significant results for the paths to performance from accommodation (β = 33, t = 3 70, $p <$ 01) and affective commitment (β = 61, t = 5 89, $p <$ 01) but not from behavioral commitment (β = 13, t = 1 39, $p >$ 05) and continuance commitment (β = – 04, t = – 45, $p >$ 05) These findings suggest that accommodation partially mediates the affective commitment–performance link and fully mediates behavioral commitment to performance but plays no mediating role for the continuance commitment–performance relationship[6]

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[5] Intuitively, a firm's accommodation facilitates task realignment for the parties and thus boosts overall alliance performance, with favorable outcomes for each party's performance in the IMA Regression results suggest that accommodation is positively related to a single-item measure of overall alliance performance (β = 61, t = 10 04, $p <$ 01) In addition, we found a positive correlation (r = 67) between overall alliance performance and our measure of the focal firm's performance in the alliance

Survival bias The results may be affected by survival bias, reflected in the relative absence of poor performance cases in our sample We performed two checks to assess the impact of such bias First, telephone interviews with informants for 16 of the sample IMAs that had ended showed that this was due to success (4 IMAs), failure (5 IMAs), or a more neutral reason (e g , contract expiration) (7 IMAs) On no occasion had low commitment or low accommodation caused the termination Second, we were able to generate data from a convenience set of 31 IMAs (not in our sample) that had dissolved because of interpartner relationship problems We searched for IMAs that had terminated in the last 12 months to improve the likelihood of obtaining accurate retrospective reports The addition of these extreme cases to our data set (combined sample of 205 IMAs) reduced the overall mean for the commitment, accommodation, and performance constructs from 5 23 to 4 97 We reran our analyses using the combined sample, which produced acceptable fit ($\chi^2_{(30)}$ = 73 41, $p <$ 01, NFI = 93, NNFI = 93, CFI = 96, and RMSEA = 08) and path coefficients for direct and moderator effects consistent with those reported in Table 3 Furthermore, we randomly selected 30 high-performance IMAs that were dropped from the combined sample, which reduced the overall mean for the main effects constructs to 4 78 Again, our analyses yielded results in line with Table 3 These checks, along with the wide variation in responses for the study constructs in Table 2, indicate that survival bias does not appear to be an issue in interpreting our results

Discussion and Implications

Considering the pace of alliance dissolution, it is important to understand how key processes in marketing alliances function together to affect performance (Fang et al 2008) We theorize that commitment fosters accommodative behaviors and demonstrate the pivotal role of behaviors in developing a highly productive marketing collaboration Resolutions of the adaptation and evaluation problems of alliance management are not independent Outcomes from accommodative responses to adaptations are specified as contingent on the level of relational engagement with evaluation issues in IMAs We tested our theoretical predictions, and the findings are largely consistent with the conceptual model, offering novel insights into specific processes of IMA governance that enable the partners to develop and implement joint profit-maximizing activities

Theoretical Implications

This study contributes to marketing theory in several ways First, we introduce accommodation to the IMA performance literature Although optimizing returns from pooled resources is fundamental to alliance logic, the specific processes of alliance governance that enable the partners to develop and implement their joint-profit-maximizing activities are not well understood (Antia and Frazier 2001) Our framing stresses the inherent productivity of accommodation as active, constructive responses to a partner's competitive acts that best maintain the coordination and integration of alliance activities Empirical support for H_1 provides evidence of the efficacy of accommodation in IMAs

However, our finding of a U-shaped accommodation–performance relationship in the alliance link for high-monitoring IMAs demonstrates complexity among governance processes Although the logic in H_{2a} suggests that high monitoring leads to a negative accommodation–performance relationship, we find that performance in the alliance is highest for low and high accommodation A possible explanation lies in the transformational reasoning of relationship development theorists (Ring and Van de Ven 1994, Rusbult and Buunk 1993) A self-serving partner is believed to react to consistently constructive behavior by lowering its tendency to exploit accommodative acts, realizing that the wronged firm is sincere in cooperatively achieving optimal activities for the IMA that can benefit both sides (Heide, Wathne, and Rokkan 2007) Triggering the transformation of motivation, high accommodation alters relationship beliefs by credibly manifesting a shift toward a relational response to adaptation problems (Cell 2, Figure 2) This may reverse a self-serving partner's opportunism and lead to a performance upturn (U shape) Although the firm continues its explicit monitoring, a hybrid form of task governance takes effect—a "trust-but-verify" governance mode in which unilateral monitoring and nonmanipulative, relational accommodation are recognized as coexisting, which slows and then reverses the performance decline (Ruigrok and Wagner 2003)

A related theoretical issue is whether performance gains from accommodation are curtailed by decreasing benefits and increasing costs of increasing accommodation Decreasing benefits could occur because the partner's accommodative cooperation eventually exhausts the economic gains available from coordinating work tasks using pooled resources Decreasing returns to accommodation are experienced as the IMA becomes efficient, which institutional design theory defines as "the level of joint profits in the [alliance] relative to an upper bound or 'fully efficient' state" (Carson et al 1999, p 117) Furthermore, increasing accommodation to a partner requires increasingly difficult and costly adjustments to the firm's own operations because simple, inexpensive adjustments required to integrate alliance operations have previously been implemented. Costs of enhanced accommodation may also include opportunity costs of forgone profits from alternative, competing uses of the venturing firm's resources. It would be enlightening for further research to examine performance outcomes across the full range of accommodation's effects.

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[6] To limit potential effects of common method bias, we followed Podsakoff, MacKenzie, and Lee's (2003) procedural steps We also generated primary objective performance data on sales growth and profitability growth for 36 of the sample IMAs These data were strongly correlated with our corresponding performance measures (Morgan, Kaleka, and Katsikeas 2004) Furthermore, because statistical tests for method bias using structural equation modeling require direct linear effects and multi-item construct measures (Andrews et al 2004), we estimated the potential biasing impact of common methods for the affective commitment → performance and behavioral commitment → performance links observed within our mediation analysis No change is evident in the paths The path estimates for affective commitment → performance and behavioral commitment → performance are 70 (t = 6 18, $p <$ 01) and 45 (t = 3 72, $p <$ 01), respectively, in the constrained model and 59 (t = 3 60, $p <$ 01) and 52 (t = 3 79, $p <$ 01), respectively, in the unconstrained (same-source factor) model Thus, common method bias does not appear to be a particular problem in this study

Second, the study responds to the call for research on performance effects of multiple governance mechanisms by "explicitly considering constellations of governance processes" (Heide, Wathne, and Rokkan 2007, p. 431). Figure 2 offers a new logic of the heterogeneity of IMA governance by specifying combinations of responses to basic adaptation and evaluation problems inherent in these uncertain ventures. We find that a firm's performance reflects interconnections in the way it responds to adaptation and evaluation challenges. Higher-performing combinations are consistently unilateral (low accommodation/high monitoring) or relational (high accommodation/low monitoring). Our results support the notion that outcomes for low-accommodation firms flow from self-serving demands reinforced by surveillance to ensure compliance. Similarly, the findings support the notion that outcomes for high-accommodation firms flow from cooperatively integrating resources reinforced by avoiding explicit monitoring that alienates a collaborating partner.

In contrast, our results suggest that inconsistent, hybrid approaches to the problems of uncertainty dampen performance for the firm. Relational evaluation undermines unilateral adaptation because outcomes for low-accommodation firms that avoid explicit monitoring suffer compared with those engaged in active surveillance. Likewise, unilateral evaluation interferes with relational adaptation because outcomes for high-accommodation firms that explicitly monitor suffer compared with those that rely on partner self-control. Thus, this complex picture of IMA governance supports recent insights that the question is not merely *whether* a relational approach is a substitute or complement to other mechanisms but rather *when* and *how* governance mechanisms interfere or complement one another (Cavusgil, Deligonul, and Zhang 2004; Gulati and Nickerson 2008).

Furthermore, the efficacy of monitoring as a means of managing partner competitive acts depends on the costs of monitoring (Heide, Wathne, and Rokkan 2007). Consistently unilateral solutions to adaptation and evaluation problems may not be appropriate if costs associated with difficulties in observing and interpreting an IMA partner's actions are prohibitive. The deleterious effects of interfirm diversity require the partners to incur monitoring costs (White 2005). We add to our theorizing of monitoring by considering the moderating effect of similarity between the parties, which facilitates transparency and achievement of monitoring goals. The results show consistent effects of monitoring and similarity on the accommodation-squared → performance link, enhancing confidence in our view of monitoring as a routine that can judiciously manage partner competitive behavior in IMAs. The interplay between monitoring and similarity in affecting the accommodation–performance link appears complex and is an intriguing issue for future inquiry.

Third, in identifying how and why accommodation matters in IMAs, we advance a novel explanation of the link between commitment and performance based on a firm's response to its partner's competitive acts. The study adds to the limited empirical work (Luo 2002), highlighting greater intricacy than the generally accepted positive, direct association. We explicate not only the role of accommodation in enabling committed partners to cope with unexpected problems that dislodge IMA task alignment but also the notion that different commitment facets are likely to be nonequivalent within the process.[7] For example, affective commitment appears to be naturally dyadic and seems most productive because it alone influences accommodation and performance in the alliance. Our results challenge the tendency among channels and alliance studies (Ramaseshan, Yip, and Pae 2006) to treat commitment as a unidimensional, global, or higher-order construct.

Managerial Implications

The argument that committed partners seek win–win situations that can improve IMA outcomes has gained acceptance among practitioners. This study of the mechanisms linking commitment to performance in the alliance supports this view but also qualifies it in various ways. Our theoretical framework and the results show that the accommodation mechanism plays a major role in the translation of commitment into performance. The implication is that alliances that encourage partner commitment as an end in itself but neglect the process of governing adaptation and evaluation problems may not achieve their intended performance objectives. The results indicate that accommodation is not without potential implementation costs, which could trap the unwary and lead to less effective deployment of a firm's commitment. Managers should note that internally consistent governance approaches tend to work well. In particular, productive activity sets are best attained by IMA partners under governance conditions in which these sets are most easily developed and implemented. Thus, accommodation plays a pivotal role in low-monitoring IMAs, governed relationally through self-regulation. High accommodation enables the partners to integrate their activities fully, and low monitoring indicates that each firm smoothly self-implements its assigned tasks with no opportunism. Bound by an advanced normative structure, the firm is obliged to accommodate its counterpart to safeguard existing relational assets and processes of the working partnership. Alliance management should recognize that deviation from this, in the form of low accommodation, is likely to weaken the constitution and threaten the stability of the venture.

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[7] We examined whether accommodation is a dependence-driven behavior. First, we found that continuance commitment, reflecting an assessment of the IMA dependence picture (Kim and Frazier 1997), does not affect accommodation. Second, we regressed accommodation on two aspects of the focal firm's relative dependence—its value received less the partner's score and the partner's irreplaceability in the IMA less the focal firm's score (five-item scales adapted from Gilliland and Bello [2002] and Kumar, Scheer, and Steenkamp [1998])—and the three commitment facets. The firm's value received ($\beta = -.05$, $t = -.69$) and irreplaceability ($\beta = -.10$, $t = -1.64$) were not linked (at $p < .05$) to accommodation. Thus, accommodation manifests goodwill rather than dependence.

Managers may also find advantage in understanding the less straightforward U-shaped link between accommodation and performance in IMAs with pronounced monitoring Here, a firm's performance in the alliance increases when its accommodative response is either low or high These nonrelational alliance partnerships are most efficient when they are consistently unilateral, which involves high monitoring and little (or no) accommodation Broadly, accommodative behavior is viewed as a manipulative extension of the actor's competitive behavior and offers the counterpart the opportunity to act exploitatively Thus, as accommodation grows from low levels, the firm's performance decreases as a result of its increased exposure to opportunism Managers need to appreciate that only strongly consistent accommodative responses to the partner's competitive behavior will represent a credible shift toward relational governance intentions by the firm and encourage the partner to follow suit In a competitive climate, only emphatic accommodative behaviors that convincingly demonstrate the superiority of cooperation over competition will trigger the joint IMA activity necessary to synergistically and productively integrate the partners' behaviors

Furthermore, this study calls on managers to consider that the attributes of commitment exert differential effects on accommodation and performance in the IMA We reveal that accommodation partially mediates the effects of affective commitment and fully mediates the effects of behavioral commitment on performance Continuance commitment exhibits no association with either outcome Thus, managers may derive benefit from prioritizing the development of affective, "strong form" commitment sentiments and should also contemplate establishing behavioral levers pertaining to the timely investment of economic and emotional resources in the IMA operation The social attachment efforts of the partners seem to engender a deeper level of relational engagement through which independent actors are able to realize coordination advantages

Limitations and Future Research Directions

The empirical assessment of our theoretical model should be interpreted in light of certain limitations The cross-sectional nature of the data limits our ability to make causal inferences Longitudinal data would have been useful to establish the hypothesized sequence of events and investigate how changes in certain variables affect venturing firm performance over time In essence, sagacious longitudinal research involves an enormous amount of sustained cooperation by managers serving as key informants over time In alliance research, sample attrition tends to be considerable (Makino et al 2007), potentially creating data reliability problems Our prestudy interviews revealed that knowledgeable IMA managers often are unwilling or unable to participate in research on multiple occasions Another study limitation concerns our focus on a venturing firm's accommodation and performance in the alliance An intriguing opportunity for further research would involve extending the model to examine the interplay between focal firm and partner firm accommodation and performance in linking to overall IMA performance

Caution should be exercised in attempts to generalize from these findings We conducted this study within the context of IMAs of U S , Western European, and Far Eastern firms with U K partners Testing the external validity of our findings would ideally require replication studies Of interest is whether accommodation is used less and is less related to performance in more typical arm's-length relationships Typically, IMAs exhibit moderate to high interdependence between the parties Unilateral accommodation deployed when high interdependence or mutual commitment does not already exist would be a risky strategy Although it could motivate a desired response from the partner, the potential for exploitation would be greater Accommodation must glean a desired response, or it will not persist The current methods (e g , cross-sectional data, survival bias) do not allow such a test Capturing this cost of accommodation represents a valuable opportunity for further research

Despite the salience of accommodation and monitoring in addressing the twin governance problems of adaptation and evaluation in IMAs, further research might explore a more complex array of governance mechanisms and levels Mechanism interconnections and allied implementation costs are critical to fostering and maintaining value-enhancing alliance exchanges Additional research is needed to place accommodation in the broader context of relational, social, psychological, and formal contractual elements through which committed partners could conceivably allay governance tensions within their marketing alliances Research might also examine the level at which governance processes occur in an IMA For example, does monitoring primarily reflect an organization decision while accommodation springs from individual-level decisions (Fang et al 2008)? Along this line, the literature (Perrone, Zaheer, and McEvily 2003) suggests that the discretion managers have in enacting their roles could condition the links between commitment facets and accommodation in these important organizational forms for conducting marketing

APPENDIX
Measurement Scales

Construct	Reliability[a]
Performance in the Alliance	
Effectiveness	75
(Seven-point Likert scale, adapted from Bucklin and Sengupta [1993] and Fisher, Maltz, and Jaworski [1997])	
1 The alliance has achieved my firm's set goals	
2 The time and effort spent by my firm in developing and maintaining the alliance has been worthwhile	
3 This alliance has not been productive enough for my firm (R)	

APPENDIX
Continued

Construct	Reliability[a]
Efficiency (Seven-point Likert scale, adapted from Boyle and Dwyer [1995] and Dunn, Norburn, and Birley [1994]) Thinking of performance outcomes relative to the inputs required to achieve them, please indicate your level of agreement with the following statements 1 In this alliance, my firm's resources are deployed efficiently 2 Procedures and mechanisms for utilizing my firm's alliance resources are cost-effective 3 The alliance is not effective in converting my firm's resource inputs into venture outputs (R)	77
Responsiveness (Seven-point Likert scale, adapted from Ayers, Dahlstrom, and Skinner [1997] and Kumar, Stern, and Achrol [1992]) In thinking about the alliance's ability to sense and respond to change, please indicate your level of agreement with the following statements 1 My firm's alliance operations can adapt quickly to environmental changes 2 My firm is able to make adjustments in the alliance to cope with changing circumstances 3 Whenever some unexpected situation arises, my firm is capable of modifying the existing structure and strategies of the alliance 4 In the face of problems or special circumstances, my firm's managers cannot make adjustments to the alliance as required (R)	77
Accommodation (Seven-point scale anchored by "never" and "always", new construct measure development) When unexpected events or problems occur in the alliance and your firm is unhappy or dissatisfied with your partner's self-serving actions, to what extent does your firm 1 Enter into a direct discussion with the partner to better understand the situation? 2 Suggest an ideal solution to the partner? 3 Show the partner the logic of their position? 4 Attempt to get all its concerns and difficulties into the open? 5 Work toward a compromise with the partner? 6 Try to get the partner to make some concessions? (R) 7 Depart from formal or informal alliance agreements? (R) 8 Exchange harsh words with the partner? (R) 9 Make demands that are in conflict with the partner's interests? (R) 10 Threaten to end, or withdraw some resources from, the alliance? (R)	—[b]
Affective Commitment (Seven-point Likert scale, adapted from Kim and Frazier [1997]) 1 A high sense of unity exists between the alliance partner and my firm 2 The alliance partner is a very important ally of my firm 3 My firm and the alliance partner have developed a close business relationship 4 My firm lacks a strong business link with this alliance partner (R)	84
Continuance Commitment (Seven-point Likert scale, adapted from Kim and Frazier [1997] and Kumar, Scheer, and Steenkamp [1995]) 1 My firm is going to continue with the alliance for years 2 My firm expects the alliance to be long-lasting 3 My firm sees the alliance as constituting a long-term strategy 4 My firm may have to end this alliance soon (R) 5 My firm is uncertain whether this alliance will last long (R)	90
Behavioral Commitment (Seven-point Likert scale, adapted from Kim and Frazier [1997]) 1 My firm devotes more time to the alliance when it needs help 2 My firm adjusts its operations when necessary for the alliance 3 My firm provides special aid to the alliance when it is in trouble 4 My firm does not help the alliance to solve its problems (R)	76
Monitoring 78 (Seven-point Likert scale, adapted from Aulakh, Kotabe, and Sahay [1996] and Inkpen and Currall [1997]) 1 My firm believes it is not necessary to monitor the partner's work in order to ensure high standards (R) 2 My firm believes the alliance partner is not the sort of partner that needs constant surveillance (R) 3 My firm closely monitors the partner after asking it to do something 4 My firm watches the partner in everything it does	

[a] Composite reliability (Fornell and Larcker 1981)
[b] Formative scale
Notes (R) indicates that the item was reverse scored

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Ana-Marija Ozimec, Martin Natter, & Thomas Reutterer

Geographical Information Systems–Based Marketing Decisions: Effects of Alternative Visualizations on Decision Quality

Marketing planners often use geographical information systems (GISs) to help identify suitable retail locations, regionally distribute advertising campaigns, and target direct marketing activities Geographical information systems thematic maps facilitate the visual assessment of map regions A broad set of alternative symbolizations, such as circles, bars, or shading, can be used to visually represent quantitative geospatial data on such maps However, there is little knowledge on which kind of symbolization is the most adequate in which problem situation In a large-scale experimental study, the authors show that the type of symbolization strongly influences decision performance The findings indicate that graduated circles are appropriate symbolizations for geographical information systems thematic maps, and their successful utilization seems to be virtually independent of personal characteristics, such as spatial ability and map experience This makes circle symbolizations particularly suitable for effective decision making and cross-functional communication

Keywords data visualization, spatial marketing decisions, symbolization, geographical information systems thematic maps, cartograms

Approximately 75% of the data that decision makers use include at least one spatial component, such as a customer address, population distribution, purchasing power, target group coverage, trading area, competition, or the demographic distribution of customers (Tonkin 1994) Retailers and direct marketers routinely use many of these types of spatial data to make strategic and tactical decisions with respect to management of pricing and promotions (Bronnenberg and Mahajan 2001, Jank and Kannan 2005), targeted advertising (Carton 2003, Parker 2004), direct marketing campaigns (Steenburgh, Ainslie, and Engebretson 2003), retail site selection (Hernández and Bennison 2000, Ter Hofstede, Wedel, and Steenkamp 2002), and sales force planning (Zoltners and Sinha 2005)

In recent decades, a variety of visual decision aids have become essential tools for supporting marketing analysts in many domains Geographical information systems (GISs) are widely used tools in marketing practice (Goodchild 1991) that combine data on geographical entities (e g , zip code areas) with digital maps (Fischer and Getis 2010) To avoid information overload, these data often need to be filtered, condensed, and represented in a manner that is compatible with the psychology of decision makers (Hoch and Schkade 1996, Van Bruggen, Smidts, and Wierenga 1998) To represent quantitative spatial data (e g , purchasing power), a GIS typically allows users to choose from among a set of predefined thematic maps These GIS thematic maps differ in the way they make use of certain symbolizations (e g , circles, bars, area distortions, color shading) to visualize the same underlying spatial data However, there is little knowledge on which kind of symbolization is the most adequate in which problem situation To date, the user is left to his or her own devices when choosing among the available GIS thematic map options, which is especially problematic when the tasks become more complex, such as in a typical geospatial marketing decision context The current study attempts to close this research gap by attaining more in-depth insights into the relative capabilities of various symbolizations to support better decision making Given the long-term profit impact of strategic decisions, such as site selection, the importance of gaining substantial insight into the relative merits and drawbacks of such alternative GIS thematic maps is clear

Learning more about GIS thematic map effectiveness is of crucial relevance to both decision makers and GIS designers If the data representation matches the underlying spatial task and the cognitive capabilities of decision makers, more rapid and more accurate decisions will result In

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addition, GIS designers will be able to improve their data visualization tools

We investigate GIS-assisted decision making by performing a large-scale online experiment (1349 participants with a heterogeneous professional and prior GIS experience background), in which we test relevant GIS thematic maps in a mixed between-subjects (symbolization, time pressure) and within-subjects (degree of task complexity) design In this experiment, the participants made a series of site selection decisions, choosing the best of five competing sites on GIS thematic maps We find that the choice of the symbolization significantly affects participants' ability to locate the objectively best solution The results demonstrate that circles outperform other relevant symbolizations of quantitative data We further find that making accurate decisions based on GIS thematic maps depends little on the personal characteristics of the decision makers Thus, if the appropriate symbolization is used, even people with moderate spatial ability and hardly any map experience can identify good solutions Our findings underline the potential of GIS thematic maps as an effective decision support tool Thus, we provide valuable insights into the successful utilization of GIS in marketing, and we point to the relevance of choosing appropriate symbolizations that fit multicriteria marketing decision problems

After summarizing the related literature, we develop a conceptual framework that links alternative symbolizations under varying degrees of task complexity and time pressure to decision performance metrics Subsequently, we describe the experimental setting and follow up with a discussion of our findings Finally, we draw conclusions and outline an agenda for future research endeavors

Related Literature

Research into different mental representations derived by decision makers for structurally similar problems (problem isomorphs) suggests that decision makers perform significantly better when their problem-solving processes are compatible with the problem representation (Hayes and Simon 1977) In particular, visual representations tend to support simultaneous information processing and are likely to lead to more intuitive and holistic, rather than piecemeal, information processing (Holbrook and Moore 1981, Sloman 1996) This suggests that visual representations can enhance a decision maker's capability to effectively evaluate information on the basis of multiple decision criteria Thus, GISs appear to be particularly useful for multifaceted marketing decisions, which require several spatial components to be inspected simultaneously and combined with one another

Table 1 summarizes the contributions from prior studies that can be considered the most important in the context of the current research All these studies explore the effects of different representations of quantitative data on one or more dependent variables measuring decision performance Cognitive fit theory, developed by Vessey (1991), proposes that decision performance significantly depends on the match or "cognitive fit" between the decision task and the problem representation—that is, the way of presenting the problem-related information to the decision maker Dennis and Carte (1998) extend the research on Vessey's cognitive fit theory to GIS thematic maps versus tabular information representations They find that decision makers who use GIS thematic maps make faster and more accurate decisions when tasks require the consideration of adjacency relationships Note that our empirical approach focuses on marketing problems that involve such geographical adjacencies Smelcer and Carmel (1997) report that especially with increasing task complexity, the use of maps with specific properties can enhance decision performance These findings highlight the importance of a profound understanding of decision performance as associated with the use of alternative GIS thematic maps in marketing

Several empirical studies in early cartographic research (MacEachern 1982a) have demonstrated that the power of thematic maps to facilitate decision making depends on the complexity of the symbolization employed Thus, differences in the complexity reduction capabilities of the available methods of symbolization deserve careful attention Some of these studies have focused exclusively on the relative effects of variations within one specific type of symbolization (e g , bar charts versus divided bar charts, use of colors versus shading) on decision outcomes (for an overview, see Slocum, McMaster, and Kessler 2009, Tufte 2001) Though working at an elementary level, using only one decision criterion, MacEachern (1982a, b) provides some of the few contributions that explicitly compare the relative performance of different symbolizations

Another notable exception is the theory of elementary perceptual tasks that Cleveland and McGill (1984) developed They suggest a set of ten elementary perceptual tasks involved in visual decision making However, this conceptual framework is not directly transferable to the context of multicriteria marketing decision making based on GIS thematic maps First, it disregards symbol overload on GIS thematic maps, a phenomenon that typically occurs when many symbols need to be portrayed in a small area of the map Excessive symbol overload can (negatively) affect the ultimate decision (Cleveland and McGill 1984, Jarvenpaa 1989) and therefore should be considered when assessing symbolizations Second, Cleveland and McGill's investigations were restricted to the completion of rather simple tasks, such as estimating the perceived relative values of single symbolizations In contrast, marketing decision problems are usually multidimensional by nature For example, site selection planning requires the analyst to compare several aggregates of multiple (partially enclosed) zip code areas of varying attractiveness within a catchment area across multiple decision criteria We are not aware of any prior studies that have sufficiently studied such a visual aggregation across multiple symbolic representations, and this raises doubts as to whether Cleveland and McGill's insights also hold in the context of complex marketing decision problems Against this background, we develop a conceptual framework that explicitly links combinations of different symbolizations and options for coping with symbol overload with decision performance

TABLE 1
Experimental Studies on the Effects of Symbolic Data Representations on Decision Making

Performance Differences Studied	Selected References	Multiple Decision Criteria	Geocontext (Adjacency)	Issue of Symbol Overload Considered	Dependent Variables		Major Findings
					Objective	Subjective	
Tabular versus graphical representations	Vessey (1991)	+/–	– (–)	–	Accuracy, efficiency	–	•Performance on a task will be enhanced when there efficiency is a cognitive fit (match) between the information emphasized in the representation type and that required by the task type (cognitive fit theory)
	Dennis and Carte (1998)	+	+ (+)	–	Accuracy, efficiency	–	•When adjacency relationships among geographical entities are relevant, maps are more effective and more efficient than tables
	Smelcer and Carmel (1997)	+	+ (–)	–	Accuracy, efficiency	–	•As task difficulty increases, maps are more effective for problem-solving tasks than tables
Within the same symbolization type	Simkin and Hastie (1987)	–	– (–)	–	Accuracy, efficiency	–	•Performance bar charts > divided bar charts > pie charts
	Mersey (1990)	–	+ (–)	–	Accuracy, efficiency, recall	–	•Recommendation for representing numerical data shading > color
	Flannery (1971)	–	+ (–)	–	Accuracy	–	•Perceived magnitude of proportional symbols (e g , circles) does not correspond to their physical size (people tend to underestimate the magnitude of large symbols) This study recommends optimal grading calculation of proportional symbols
Between different types of symbolizations	Cleveland and McGill (1984)	–	+/– (–)	–	Accuracy	–	•Ten elementary tasks ordered from most to least accurate (1) position along a common scale, (2) positions along nonaligned scales, (3) length, direction, and angle, (4) area, (5) volume, and curvature, and (6) shading and color saturation (theory of elementary perceptual tasks)
	MacEachren (1982b)	–	+ (–)	–	–	Perceived ease of task	•Choropleth maps are more complex than isopleth maps
	MacEachren (1982a)	–	+ (–)	–	Recall	–	•Isopleth maps are more effective than choropleth maps
	Our study	+	+ (+)	+	Accuracy, efficiency	Decision confidence, perceived ease of task	

Notes "+" indicates that the authors considered it in the study, and "–" indicates that the authors did not considered it in the study

Conceptual Research Framework and Hypotheses

The most commonly used GIS thematic maps in marketing practice are choropleth, proportional symbol, and diagram maps To cover recent developments in cartography, we also consider cartograms, a relatively new kind of GIS thematic map Successful implementations in diverse disciplines such as statistics (Barford and Dorling 2007), politics (Gastner and Newman 2004), and medicine (Dorling 2007) underscore the potential usefulness of cartograms To facilitate a clearer understanding of the specific properties and limitations of the respective mapping approaches, Figure 1 provides illustrative examples of GIS thematic maps when two decision criteria are to be represented Note that the representation of multiple variables may result in a different number of maps depending on the characteristics of the map type used

The GIS thematic maps differ in the way they symbolize the distribution of a quantitative spatial variable across geographic areas (e g , zip code regions) In what follows, we focus on typically used symbolizations on each of the four GIS thematic maps Choropleth maps (Figure 1, Panel A) use shading proportional to the magnitude to be represented (Tyner 1992) Cartograms are maps (Figure 1, Panel B) in which one variable is substituted for land area Such a map attempts to achieve this by rescaling (distorting) the area of each geographic region according to the relative magnitude of this variable If a second variable must be displayed in a cartogram, this is typically accomplished by shading the distorted areas (i e , a combined symbolization of shading and distortions) Proportional symbol maps (Figure 1, Panels C and D) use circles drawn at the central point of each geographic area such that their expansions reflect the respective variable levels (Tyner 1992) Diagram maps (Figure 1, Panels E–G) place bar diagrams on the geographical areas of the map

Note that unlike choropleth maps and cartograms, proportional symbol and diagram maps are potentially affected by symbol overload With respect to symbol overload, GISs provide two options for proportional symbol maps (symbol squeezing and symbol overlap, see Figure 1, Panels C and D) and three possibilities for diagram maps (symbol squeezing, symbol overlap, and symbol dislocation, see Figure 1, Panels E–G)

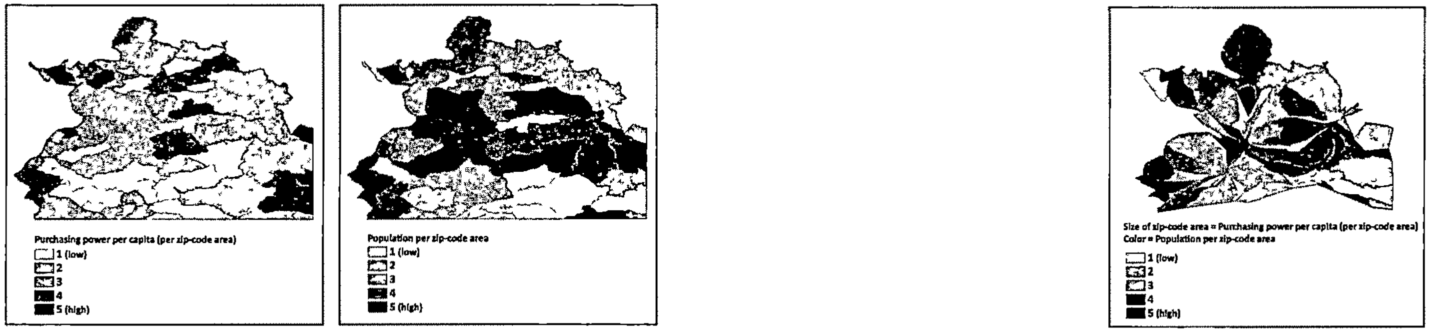
Our research framework relates alternative symbolizations (shading, shading and distortions, circles, and bars) used in GIS thematic maps and their symbol overload–handling options to decision performance metrics (see Figure 2) In accordance with Crossland, Wynne, and Perkins (1995) and Smelcer and Carmel (1997), we assume that this relationship is moderated by task complexity (the number of decision criteria and similarity of the alternatives) and user attributes (spatial ability and map experience) Furthermore, because marketing decisions must often be made under time pressure, we include this variable as a moderator in our research framework

We assume that the combination of all decision-relevant criteria results in a certain revenue level for each location Decision makers must visually assess the competing locations according to these criteria and choose the location with the highest expected revenue We decompose decision performance into objective and subjective criteria related to decision quality and the decision process As an objective metric of decision quality, we use decision accuracy, defined as the average revenue of the location actually chosen by decision makers relative to the revenue of the optimal location (expressed in percentage) Decision efficiency serves as an objective metric of the decision-making process, which is measured as the duration the decision maker needs to solve a task (the lower, the more efficient) As a subjective metric of decision quality, we specify the decision confidence of the decision maker, whereas perceived ease of task serves as a subjective metric of the decision process According to the proposed metrics, superior decision performance is indicated by both higher decision quality (i e , higher decision accuracy and higher decision confidence) and a facilitated decision process (i e , higher decision efficiency and higher perceived ease of task) Note that objective decision performance is relevant for primary tool evaluation, whereas subjective decision performance is an important driver of tool usage (Kayande et al 2009, Van Bruggen 1992, Wierenga and Oude Ophuis 1997) To develop our hypotheses with respect to the relative decision performance of symbolizations, we draw from Bertin's (1983) sign system, Gestalt theory (Wertheimer 1923), and guided search theory (Wolfe 1994)

Types of GIS Symbolization

Bertin's (1983) sign system is a universally recognized concept used to examine the cartographic transcription of geographic information (MacEachren 1992, Robinson et al 1984, Slocum, McMaster, and Kessler 2009) Bertin proposed a systematical approach to communicating information visually He lists six elementary visual variables (size, value, texture, color, orientation, and shape) and discusses the effects of varying the perceptual properties of the visual variables to derive meaningful representations (see Figure 3) According to their perceptual properties, these visual variables have different levels of organization (measurement scales) associative, selective, ordered, and quantitative Presentation techniques for given data should be selected in such a way that each data variable is represented by a visual variable with the corresponding level of organization Against this background, only symbolizations based on Bertin's visual variables of size and value have the perceptual property of being able to adequately represent ordered (interval-scaled) or even numerical data This property makes them particularly useful for visualizing quantitative marketing data, such as data regarding purchasing power and the like, in a geospatial context Thus, we sharpen our research focus on variations in these two visual variables More specifically, the visual variable size symbolizes quantitative data by varying the degree of its apparent expansions, such as the area of circles, the length of bars, or the distortion of zip code areas The visual variable value symbolizes quantitative data through shading—that is, relative brightness or darkness (whether in black or any other color) proportional to the magnitude to be presented (Robinson et al 1984)

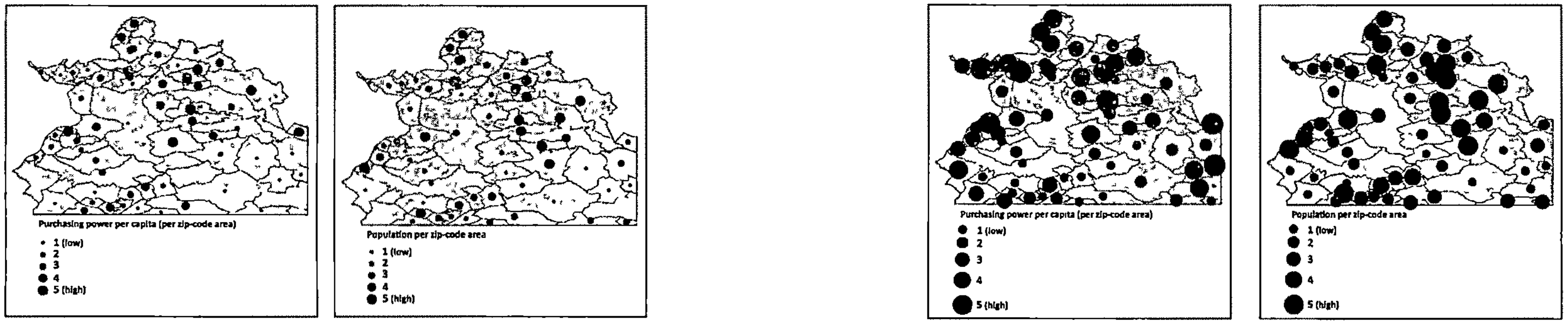
FIGURE 1
Illustrative Examples of GIS Thematic Maps



A: Choropleth Maps

B: Cartogram

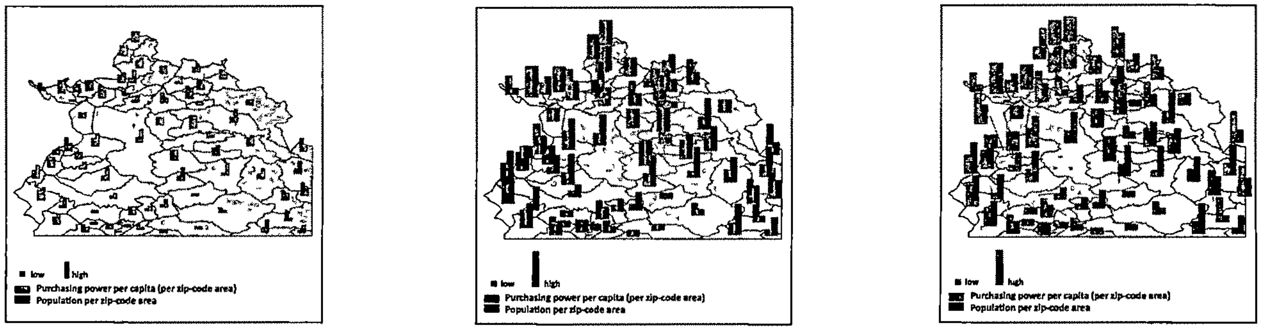
Purchasing power per capita (per zip-code area)
1 (low)
2
3
4
5 (high)
Population per zip-code area
1 (low)
2
3
4
5 (high)
Size of zip-code area = Purchasing power per capita (per zip-code area)
Color = Population per zip-code area
1 (low)
2
3
4
5 (high)



C: Proportional Symbol Maps (Squeezing)

D: Proportional Symbol Maps (Overlap)

Purchasing power per capita (per zip-code area)
1 (low)
2
3
4
5 (high)
Population per zip-code area
1 (low)
2
3
4
5 (high)
Purchasing power per capita (per zip-code area)
1 (low)
2
3
4
5 (high)
Population per zip-code area
1 (low)
2
3
4
5 (high)



E: Diagram Map (Squeezing)

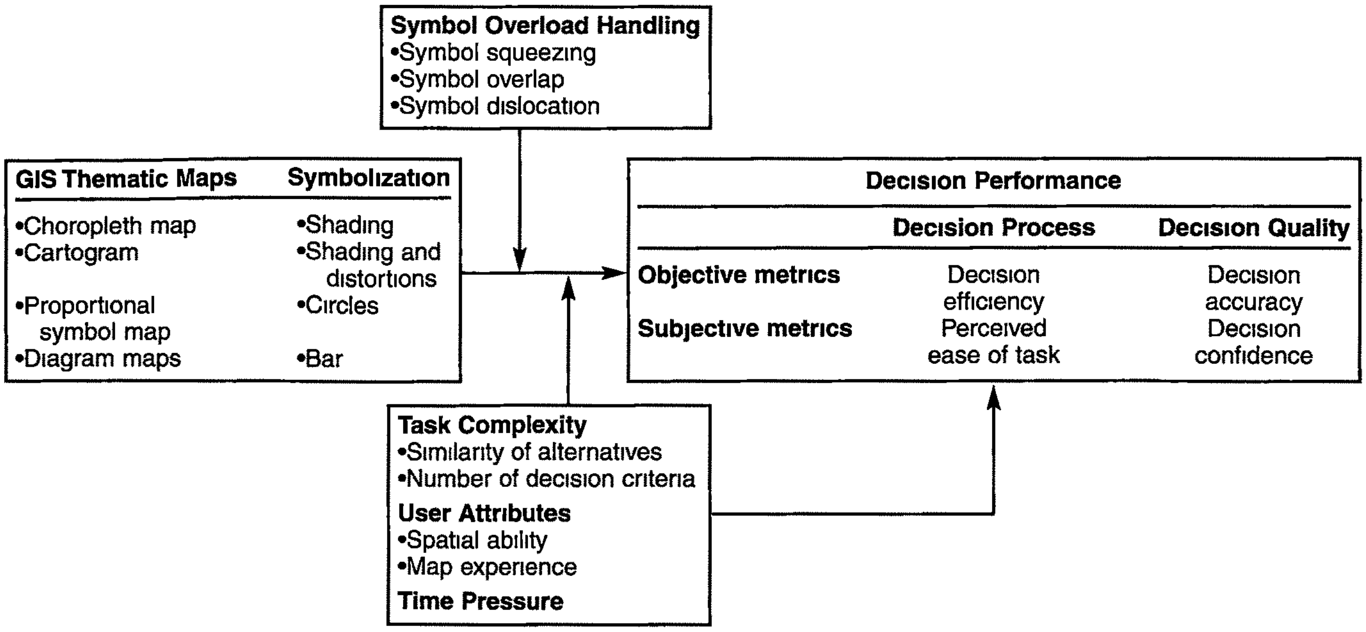
F: Diagram Map (Overlap)

G: Diagram Map (Dislocation)

low
high
Purchasing power per capita (per zip-code area)
Population per zip-code area
low
high
Purchasing power per capita (per zip-code area)
Population per zip-code area
low
high
Purchasing power per capita (per zip-code area)
Population per zip-code area

Notes: We represent two geospatial variables—purchasing power per capita and population per zip code area—using choropleth maps (two maps), a cartogram, proportional symbol maps (two maps), and diagram maps.

FIGURE 2
Conceptual Framework



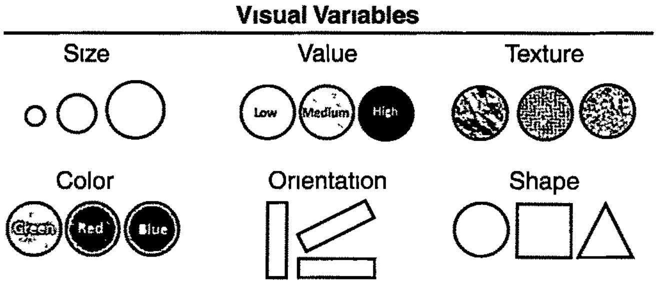
On the basis of Bertin's (1983) sign system, we can organize the symbolizations used in GIS thematic maps for representing quantitative data as the visual variables size (circles, bars, and distortions) and value (shading) Table 2 illustrates the relationship among GIS thematic maps (Column 1), their type of symbolization (Column 2), available options for symbol overload handling (Column 3), the visual variables according to Bertin (Column 4), and the respective apparent expansions in size (Column 5)

According to Bertin's (1983) sign system, the visual variable size allows for a quantitative and value-based representation of ordered information (see Figure 3) This property implies that when size is used to visualize quantitative data, human vision enables decision makers to infer (without a legend) the scale unit of the represented variable For example, the length (area) of one symbol can be perceived as equal to x times the length (area) of another symbol In contrast, when value is used to represent the same data, decision makers can only perceive ordinal differences For example, gray is perceived as intermediate between white and black Because of this, quantitative data can be accurately represented only by variations in size (Bertin 1983, MacEachren 1992, Slocum, McMaster, and Kessler 2009) Accordingly, we propose the following

> H_1 GIS thematic maps result in superior decision performance if they employ the visual variable size (circles or bars) rather than value (shading)

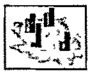
Note that decision performance is measured in terms of objective and subjective metrics of decision quality and decision process characteristics, as Figure 2 shows In a context with multiple decision criteria, pure symbolizations (i e , based only on shading, circles, or bars) or combined (or hybrid) symbolizations (i e , shading and distortions) can be used Guided search theory (Wolfe 1994) provides some indication that hybrid representations may be superior to pure symbolizations Here, it is argued that pure symbolizations typically enable decision makers to process only one partial representation after another in a serial manner The theory proposes that this is due to limitations of human cognition in adequately dealing with two or more requests simultaneously in the parallel-processing stage of percep-

FIGURE 3
Bertin's (1983) Visual Variables and Their Respective Levels of Organization Properties



Visual Variable	Level of Organization Low ◄——► High			
	Associative	Selective	Ordered	Quantitative
Size		X	X	X
Value		X	X	
Texture	X	X		
Color	X	X		
Orientation	X	X		
Shape	X			

TABLE 2
Relationship Between Symbolizations and Visual Variables

GIS Thematic Maps	Symbolization	Symbol Overload Handling	Visual Variables According to Bertin (1983)	Apparent Expansions of Size
Choropleth map	Shading	—	Value	—
Cartogram	Shading and distortions	—	Value and size	Area
Proportional symbol map	Circles	Symbol squeezing	Size	Area
		Symbol overlap		
Diagram map	 Bars	Symbol squeezing	Size	Length
		Symbol overlap		
		Symbol dislocation		

tual cognition. In line with these arguments, we propose the following hypothesis:

H_2: A combination of shading and distortions results in better decision performance than multiple pure symbolizations.

In contrast to the theory of elementary perceptual tasks, the geographical literature apparently favors circles (i.e., area) to bars (i.e., length) for representing quantitative data. Here, it is argued that circle symbols produce visually stable representations, conserve map space, and therefore enable the viewer to infer the spatial distribution of data from circle expansions (Brewer and Campbell 1998; Cabello et al. 2006; Griffin 1985). Symbols placed on a narrow edge (e.g., bars) appear visually unstable. Circles avoid this and also tend to be less demanding in terms of map space than bars. Our research framework focuses on data visualizations involving spatial structures. Thus, we expect that circles are more appropriate symbolizations for representing quantitative data on GIS thematic maps than bars.

H_3: Circles result in better decision performance than bars.

Symbol Overload Handling

Intuitively, a good representation should enable the viewer to see at least some part of all symbols on the map and to judge their magnitudes as correctly as possible. The accuracy with which the magnitude of a symbol can be judged is proportional to the part of its boundary that is visible (Cabello et al. 2006). Because overlap is a result of the data distributions that must be displayed, overlap is often difficult to avoid. It is possible to create relatively small diagrams that hardly overlap. Thus, we expect that the avoidance of symbol overlap by proportionally reducing the relative magnitudes of circles or bars (squeezing) will prove more effective than allowing overlap.

For proportional symbol mapping, different algorithms are available for arranging given sets of overlapping circles such that all of them can be seen as well as possible. For example, symbols are often stacked on top of each other to improve symbol visibility (see Figure 1, Panel D). Although symmetric symbols (e.g., circles) can overlap, it is virtually impossible to accept overlap between columnar symbols (see Figure 1, Panel F), such as bars (Keates 1973). When more than one variable is represented by bars, it is not always possible to stack diagrams in order from small to large. As a consequence, overlapping diagrams often can no longer be easily assigned to the corresponding area and tend to lead to confusion (Kraak and Omerling 1996; Slocum, McMaster, and Kessler 2009). When the length of a bar is covered by another bar (overlap), it is not possible to determine the value of the represented variable. In contrast, circle symbols make it possible to determine the value of the represented variable as long as the radius of the circle is inferable. In addition, Gestalt theory's principle of closure (see the Glossary in the Appendix) suggests that symbols such as circles are visually completed by the viewer, even if only parts of a circle are covered (Wertheimer 1923). Accordingly, we propose an interaction effect between the handling of symbol overload and the type of symbolization employed:

H_4: The use of overlapping bars more negatively influences decision performance than the use of overlapping circles.

An alternative way of avoiding bar overlap commonly implemented in GIS is to place bars outside the map and link them to their respective areas by a line (this is called "symbol dislocation"; see Figure 1, Panel G). When bars are dislocated from the map, however, it is not easy to match zip code areas with the variable of interest anymore, and a greater degree of cognitive effort is required to complete the task. Thus, dislocation complicates the development of a Gestalt (principle of proximity) understanding of the relationships among the relevant data and hinders the perceptual processes required for the successful solution of spatial tasks In accordance with this argumentation, we theorize that dislocation moderates the decision performance of bars

H_5 The use of bar dislocation leads to poorer decision performance than bar overlap

Task Complexity

Several studies have shown that the success of computer-based information systems depends on task complexity (e g , Guimaraes, Igbaria, and Lu 1992, Pieptea and Anderson 1987, Sanders and Courtney 1985) Researchers typically investigate indicators of objective task complexity, such as the number of decision criteria (Yoon, Guimaraes, and O'Neal 1995) and, less frequently, the similarity of alternative options (Wolfe 1994) Increasing numbers of decision criteria (indicating problem size) and greater similarity among the available alternatives reflect greater task complexity (it is more difficult to select the better solution from very similar than from very different alternatives) Research has found that task complexity negatively influences decision accuracy (Crossland, Wynne, and Perkins 1995, Hwang 1994, Topi, Valacich, and Hoffer 2005) and decision efficiency (Crossland, Wynne, and Perkins 1995) Smelcer and Carmel (1997) observe interactions between the representation form and task complexity, which we expect to hold in our context as well However, we extend this view by proposing additional moderating effects of task complexity on the decision performance of alternative types of symbolizations

Symbolization shading is usually employed in choropleth maps and cartograms for portraying the spatial distribution of a quantitative variable Research in cognitive psychology suggests that people tend to interpret the expansion of a zip code area as an indication of its importance (Brewer and Campbell 1998) Because zip code area size per se does not carry any information in pure shading symbolizations (choropleth maps), systematic biases in the judgment of the attractiveness of alternatives could emerge (Wedel and Pieters 2008) In contrast, the combined symbolization of shading and distortions is not expected to be vulnerable to this type of bias because the distortion of zip code areas is actually used to represent one of the decision criteria When alternatives are more similar, biased perceptions may more easily outweigh real differences Thus, we expect that the similarity of alternatives moderates the effects of alternative symbolizations (shading versus shading and distortions) on decision performance

H_6 A greater similarity of alternatives improves the decision performance of the shading and distortions combination compared with multiple pure shading

User Attributes and Time Pressure

Because of our focus on symbolizations and factors under the control of GIS designers and users, we do not formulate explicit hypotheses pertaining to user attributes and time pressure However, in line with related literature, we expect several effects of user attributes and time pressure on decision performance

User attributes can exert a significant influence on decision performance and therefore should be considered when symbolizations are assessed In particular, cognitive skills tend to have a strong impact on decision making Ekstrom, French, and Harmann (1976) divide cognitive skills into spatial ability, verbal fluency, and logical reasoning The types of cognitive skills required during the decision-making process depend on the type of problem It has been shown that the resolution of spatial tasks and working with maps require good spatial ability (Cooper 1980, Ekstrom, French, and Harmann 1976, Golledge and Stimson 1997) Spatial ability tests are particularly effective at predicting performance differences among people in geographical map reading (Lloyd and Bunch 2005) These tests require respondents to combine spatial information from multiple figures, as in the tasks in our experiment in which respondents must develop a summary assessment of information distributed on several maps Thus, we expect that people with better spatial ability will make more accurate and efficient decisions We expect that users with less map experience (in general) will need more time and be more likely to choose suboptimal decision alternatives Following Van Bruggen's (1992) findings, we expect that decision makers with greater map experience will report higher decision confidence We also expect that spatial ability and map experience moderate the effect of task complexity on decision performance Although simpler tasks should also be successfully completed by people with moderate spatial abilities, we expect them to have increasing difficulty with more complex tasks Finally, we expect analysts with map experience to be equipped with knowledge about the strengths and weaknesses of alternative GIS thematic maps and to be partly able to counterbalance these effects

The time available to solve a problem is an important factor for assessing the efficiency of symbolizations because managers must often inspect a large number of potential alternatives and make decisions under time pressure (Hwang 1994) Time pressure typically has a negative impact on objective decision performance (Zakay and Woller 1984) Furthermore, we expect that the perceived ease of task (Hwang 1994, Payne 1976) and decision confidence will be lower under time pressure

Experimental Study

We tested the hypotheses reflected in our conceptual model in an online experiment using a mixed between-within subjects experimental design (see Table 3) The between-subjects design variation was 7 (map groups) × 2 (time pressure and no time pressure) Each respondent within a map/time pressure group completed four tasks of varying complexity from the domain of retail site selection

After a brief introduction and one learning task (Kayande et al 2009) to familiarize the respondents with the usage of the relevant GIS thematic maps, we randomly assigned them to one of the experimental groups In each task, we instructed the respondents to choose the most attractive of five potential store locations for a furniture retailer that planned to enter a new market The learning tasks were comparable to the tasks in the main part, how-

TABLE 3
Mixed Between-/Within-Subjects Experimental Design

GIS Thematic Maps	Symbolization	Symbol Overload Handling	Resulting Map Groups	
Between Subjects				
Choropleth map	Shading	—	1	× Time Pressure (Yes, no)
Cartogram	Shading and distortions	—	2	
Proportional symbol map	Circles	Symbol squeezing	3	
		Symbol overlap	4	
Diagram map	Bars	Symbol squeezing	5	
		Symbol overlap	6	
		Symbol dislocation	7	

	Task Complexity	
	Similarity of Alternatives	Number of Decision Criteria
Within Subjects		
Task 1	60%	2
Task 2	30%	2
Task 3	60%	6
Task 4	30%	6

ever, the respondents were shown the correct solution after this task and the way it was calculated to ensure proper interpretation The participants in the study were not aware of the varying degrees of task complexity before participating in the experiment For the decisions in the main part of the experiment, we instructed them to base their decisions only on the information shown in the GIS thematic maps provided (for illustrative examples, see Web Appendix W1 at http //www marketingpower com/jmnov10) We also controlled for user attributes (map experience and spatial ability) In addition, we included questions about personal characteristics, such as sex, age, profession, and purpose of professional use of GIS (if any) In what follows, we first provide more details on the map groups, the manipulation of time pressure, and the task complexity of our experiment Then, we describe how we measured the covariates and the decision performance metrics

The seven map groups result from combinations of symbolizations and overload-handling options (see Table 3) Our experimental design was not fully balanced, because only the symbolizations bars and circles are actually affected by symbol overload Furthermore, to keep the experiment manageable, we focused only on GIS symbolizations that are currently used in practice We constructed all maps used in the experiment using ArcGIS 9 For simplicity's sake, catchment areas (depicted as spheres around locations) had the same magnitude for all locations

We constructed time pressure as the second treatment factor We told one subgroup of the respondents (time pressure group) up front that both the quality of the solution and the time required to solve the tasks are relevant During task completion, we showed the respondents a countdown of the time remaining to complete the task We fixed the time budget per task at the median problem-solving time of participants from the no-time-pressure experimental group After the allotted time had elapsed, the map disappeared, and the decision needed to be made When the respondent did not use the whole time budget, he or she was automatically directed to the next task We told the remaining respondents to focus only on decision quality (no time pressure)

To control for task complexity, we considered the differences (in percentage) in revenues between the optimal store location and the second-best option and the number of decision criteria (see Table 3) Tasks including lower revenue differences and a higher number of decision criteria are more complex For Tasks 1 and 2, the respondents considered two decision criteria average purchasing power (E_i) and population (Z_i) Tasks 3 and 4 included the following four additional decision criteria transport connection (P_i), target group share (R_i), parking space availability (C_i), and competitive intensity (A_i) per zip code area i We computed the revenues for tasks with two variables using Equation 1, and we computed the revenues for tasks with six variables using Equation 2

$$(1)\qquad S_2(p)=\sum_i d_i\times(E_i\times Z_i)(i=1,\ \ ,I),\ \text{and}$$

$$(2)\qquad S_6(p)=\sum_i d_i\times(E_i\times Z_i\times P_i\times R_i\times C_i\times A_i)(i=1,\ \ ,I),$$

where $S_{2(6)}(p)$ denotes the revenues of site location p and d_i a variable indicating the proportion of a zip code's area that belongs to the catchment area of this location We considered zip code regions that only partially entered the catchment area proportional to the geographically overlapping area Note that though Equations 1 and 2 imply a multiplicative attraction model, we manipulated our tasks in such a way that an additive functional form would yield the same site location as the optimal solution We used Equations 1 and 2 to design appropriate tasks, to represent them on maps, and to calculate the decision accuracy We designed the less complex tasks, 1 and 3, in such a way that the second-best store locations show a deviation from the optimal revenue of 60%, whereas Tasks 2 and 4 showed solutions that were closer together, with a deviation of approximately 30% In addition, we controlled for the correlation (fixed at approximately 20) between the decision criteria across the zip code regions belonging to a catchment area because uncontrolled intercorrelations could affect the difficulty of decision making

Different map characteristics determine the way multiple decision criteria can be visualized on the resultant maps While choropleth and proportional symbol maps can deal with only one criterion, cartograms can display two criteria per map Diagram maps can display up to three criteria without causing excessive symbol overload Accordingly, for tasks with two (six) decision criteria, respondents received two (six) maps when assigned to symbol or choropleth maps They received one (three) map(s) for cartograms and one (two) map(s) for diagrams (see Web Appendix W1 at http //www marketingpower com/jmnov10)

With respect to user attributes, at the end of the online questionnaire, we measured the spatial ability of respondents with tests developed by Ekstrom, French, and Harmann (1976) the form board, the paper folding, and the surface development tests (for more details and examples, see Web Appendix W2 at http //www marketingpower com/jmnov10) All respondents were told that they had six minutes to solve these tests across a total of 12 tasks After this time, the questionnaire automatically ended, and the test score results were sent back to respondents who had elected to receive them We measured map experience on a seven-point rating scale Following the online experiment, we asked the respondents to provide information about their familiarity with and past experience in using diverse GIS thematic maps

Our main variable for measuring the objective quality of each decision is the decision accuracy, defined as the percentage difference between the revenues (see Equations 1 and 2) of the optimal site and the revenue of the site the respondent chose For the correct decision, the decision accuracy equals 100%, values lower than 100% can be interpreted as the respective site's percentage loss in revenues compared with those of the optimal site Our second objective measure captured the time respondents took to solve a specific task decision efficiency in seconds We measured a respondent's decision confidence and perceived ease of task on seven-point rating scales

Data and Results

In this section, we first report some important sample characteristics and then discuss the results in the context of the conceptual framework The online experiment took place in May and June 2009 A total of 1349 respondents with an average age of 30 4 years participated in the study The sample consisted of 41% female respondents Broken down by occupation, 34 9% of the participants were GIS experts (they use GIS professionally), 19 4% were employed in the area of site location planning, 45 5% were students, and 8 6% were classified as "other" In our sample, site selection (75%) was the most frequent marketing application of GIS users, followed by customer segmentation (53%), direct marketing (40%), sales planning (34%), and sales force planning (33%) Our survey showed that the most frequently used GIS thematic maps in marketing practice are choropleth maps (with a mean of 4 53 on a seven-point rating scale, where 1 = "never used" and 7 = "often used"), followed by proportional symbol maps (M = 3 70) and diagram maps (M = 3 65) Cartograms (M = 1 94) are rarely used in practice On average, respondents correctly solved 8 09 of 12 tasks in the spatial ability part of the questionnaire, mean map experience was 4 74

The manipulation check for time pressure confirms that participants in the no-time-pressure group needed significantly (17 5 seconds, $p <$ 01) longer to complete the task than the group with time pressure (the average task completion time was 35 5 seconds) We conducted a check of our task complexity manipulation by comparing the perceived ease of task (PET) across the four tasks This comparison confirms that participants perceived the manipulation as we intended (PET_{task1} = 5 32, PET_{task2} = 4 58, PET_{task3} = 3 88, PET_{task4} = 3 72, $p <$ 01)

Types of GIS Symbolization

We tested the hypotheses on the relevant relationships in our framework with a series of analyses of variance With respect to the covariates spatial ability and map experience, we found no systematic differences between any subgroups that are tested against each other ($p >$ 05) We hypothesized (H_1) the superiority of the visual variable size (symbolized with circles or bars) over the visual variable value (shading) The performance of the experimental groups with respect to objective metrics—namely, decision accuracy (DAcc) and decision efficiency (DEff)—clearly indicates significant differences between the GIS symbolizations circles or bars compared with shading ($p <$ 01), providing support for Bertin's (1983) sign system Figure 4 plots the means and confidence intervals for each of the respective decision performance measures and experimental cells However, the subjective performance metrics provide only marginal support for higher decision confidence (DCon) for circles or bars versus shading ($p <$ 1), and PET does not differ at all across these symbolizations

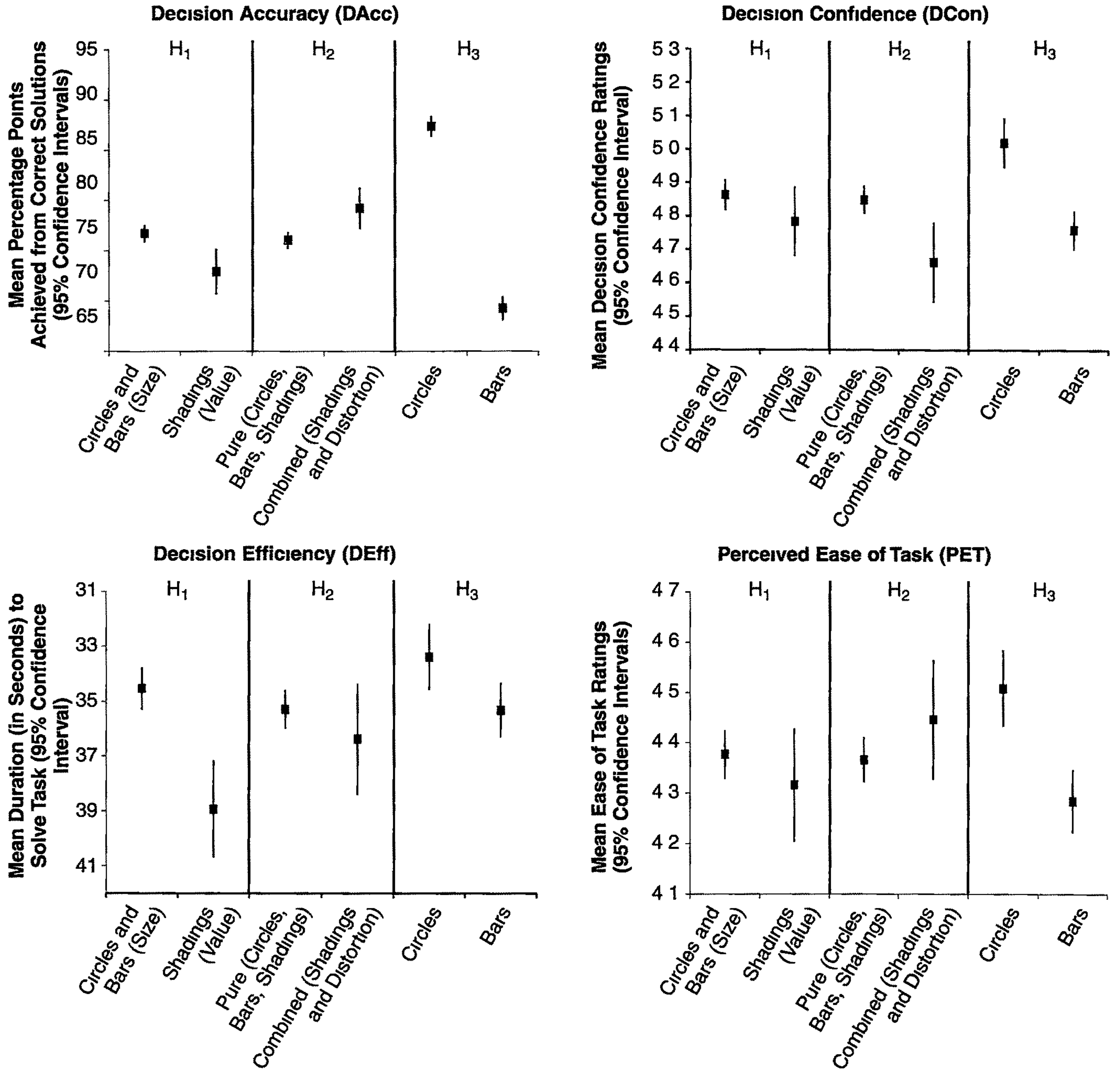
In partial support of H_2, we find that DAcc is higher for the combined symbolization than for multiple pure symbolizations ($p <$ 01) However, DCon is lower for the combined symbolization ($p <$ 01) We do not find any significant differences in DEff and PET The low levels of experience with shading and distortions (see sample descriptives, which show relatively low usage of shading and distortions in marketing practice) could explain their lower subjective decision quality (Van Bruggen 1992)

We find further support of H_3, which hypothesizes the superior performance of circle over bar symbolizations The plots in Figure 4 illustrate that circles clearly dominate bars in terms of all decision performance metrics (DAcc, DCon, PET $p <$ 01, DEff $p <$ 05)

Symbol Overload Handling

With respect to symbol overload–handling options for circles, the results (see Figure 5, Panel A) show that overlap (in contrast to our expectation) leads to better decision quality (DAcc, DCon $p <$ 01) than squeezing In contrast, bars yield the highest decision quality for squeezing, followed by overlap (DAcc $p <$ 01, DCon $p <$ 05) Dislocation (a

FIGURE 4
Decision Performance for Experimental Cells Investigated Under H_1–H_3



frequently used option for handling bar overload in practice) results in the worst decision quality ($p < 01$)

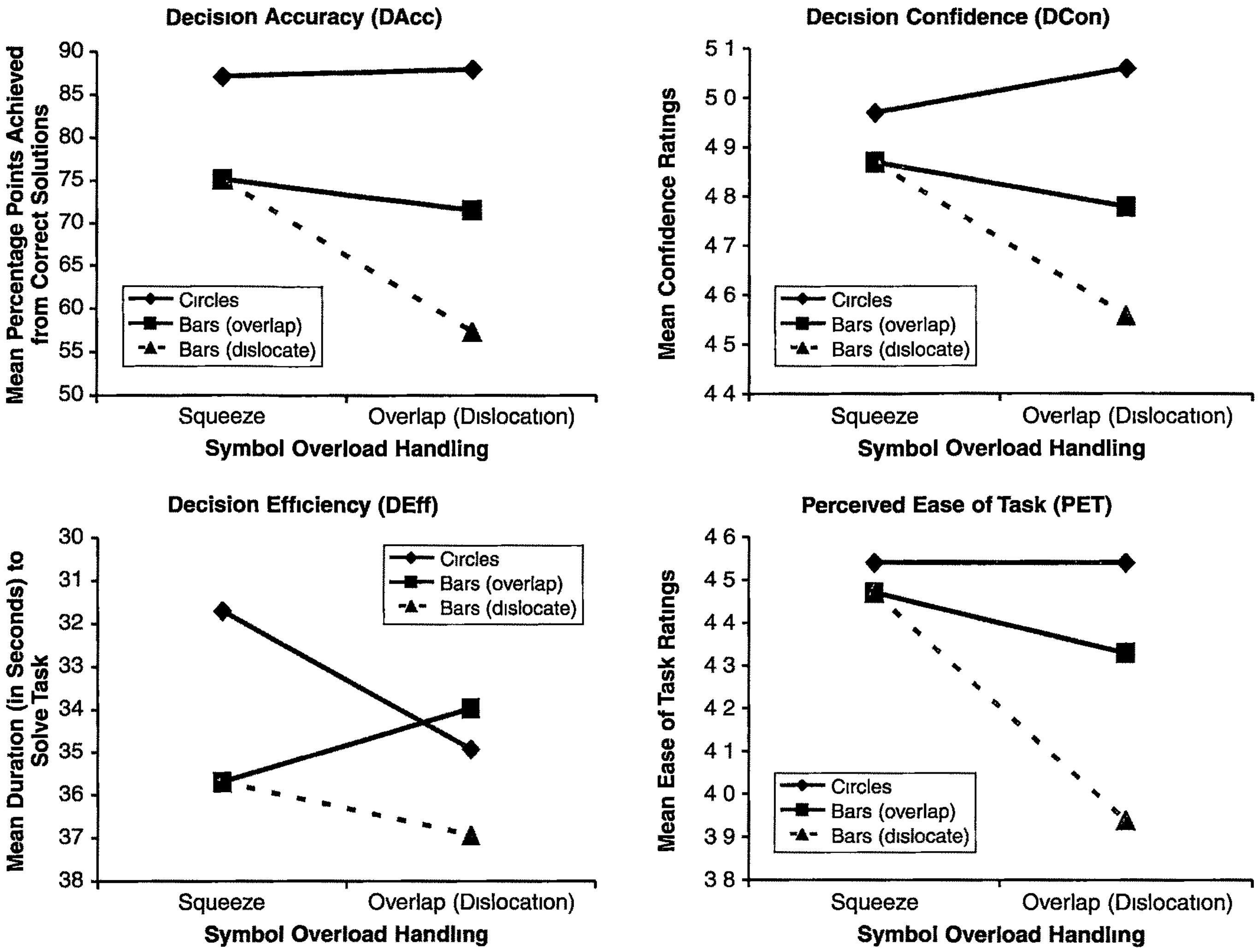
Figure 5, Panel A, visualizes the interaction of symbolization and overload-handling options for all four performance metrics The results largely support H_4 (Gestalt principle of closure)—that is, circles outperform bars when overlap is used to handle symbol overload (DAcc, DCon $p < 01$, PET $p < 05$, DEff $p > 1$) Next, we find that using bar dislocation leads to poorer decision performance than bar overlap, providing clear support for H_5 in terms of all decision performance metrics (DAcc, DCon, PET $p < 01$, DEff $p < 05$)

Task Complexity

Regarding task complexity, the results support the expectations posited in our framework, that is, we find a negative influence of a greater similarity of alternatives on DAcc, DCon, and PET ($p < 01$) Consistent with H_6, a higher level of similarity among alternatives (i e , increased task complexity) improves the relative performance of the combined symbolization shading and distortions compared with multiple pure shading (DAcc, DEff, PET, DCon $p < 01$) in terms of both objective and subjective decision performance (Figure 5, Panel B)

FIGURE 5
Decision Performance for Experimental Cells Investigated Under H_4–H_6

A: H_4 and H_5: Interactions Between Symbolization Type and Overload-Handling Options



B H_6: Moderating Effects of Task Similarity on Symbolization (Combined Versus Multiple Pure)

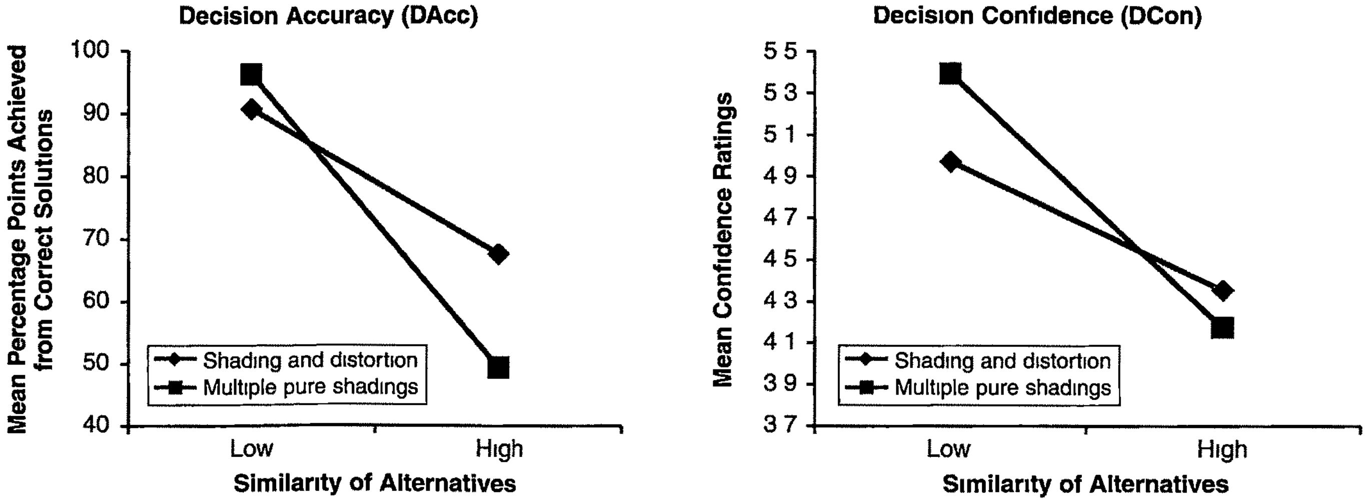
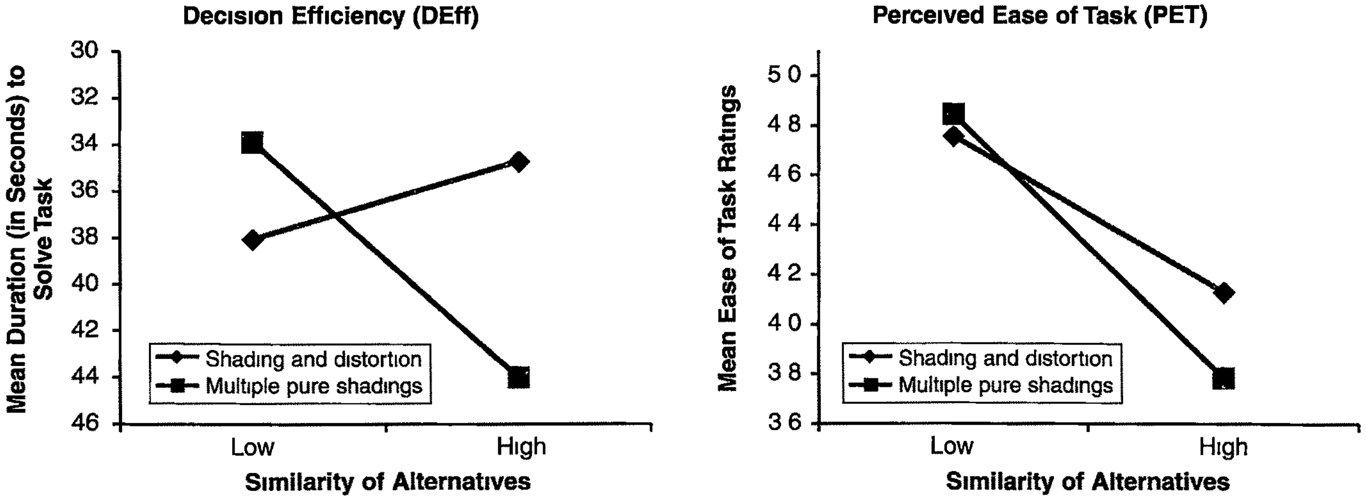


FIGURE 5
Continued

B: H_6. Moderating Effects of Task Similarity on Symbolization (Combined Versus Multiple Pure)



User Attributes and Time Pressure

Regarding the potential influence of user attributes, general map experience is associated with higher objective (DAcc, DEff $p < .05$) and subjective (DCon, PET $p < .01$) decision performance. Higher levels of spatial ability do not influence decision accuracy. Even for more complex tasks, we find only marginal differences in decision accuracy. However, respondents with higher spatial ability complete the tasks more efficiently (DEff $p < .05$) and show higher levels of subjective decision performance (DCon, PET $p < .01$). For a further assessment of the overall relevance of user attributes with respect to decision accuracy, we split the sample into three groups: those with low, medium, and high map experience or spatial ability. However, average decision accuracy for the subgroups for map experience (spatial ability) showed rather similar values: $\text{DAcc}_{\text{low}} = 74.6\%$, $\text{DAcc}_{\text{medium}} = 75.5\%$, and $\text{DAcc}_{\text{high}} = 77.3\%$ ($\text{DAcc}_{\text{low}} = 75.3\%$, $\text{DAcc}_{\text{medium}} = 76.8\%$, and $\text{DAcc}_{\text{high}} = 77\%$). Thus, the effects of user attributes turn out to be less evident than expected and lower than the size of effects caused by alternative symbolizations.

As we expected, time pressure negatively affects subjective decision performance metrics (DCon, PET $p < .01$) and DEff (see manipulation check). Notably, however, this is not true for decision accuracy. The mind seems to be capable of efficiently processing a vast amount of visual information (i.e., the assessment of five site locations on up to six equally relevant GIS thematic maps) even under time pressure. We also checked whether time pressure moderates the relative decision performance of alternative symbolizations, which is not the case.

Conclusion, Limitations, and Further Research

In marketing practice, the use of GISs is becoming increasingly important. More than 50% of retailers and direct marketers integrate them into their decision support systems to visualize geospatial marketing data. A GIS typically provides the analyst with various GIS thematic maps (choropleth maps, cartograms, proportional symbol maps, and diagram maps). Each of these GIS thematic maps differs in the way it makes use of various symbolizations (shading, shading and distortions, circles, and bars) and the way it handles symbol overload (squeezing, overlapping, and dislocation of symbols) to represent the underlying spatial data of interest.

Given the practical significance of marketing decisions derived from GIS thematic maps, surprisingly little is known about errors that might occur during visually assisted decision-making processes. The fundamental premise of this article is that the various ingredients of GIS thematic maps affect the performance of decision makers. Drawing on prior elementary empirical findings and related literature, we developed a conceptual framework that enables us to experimentally explore several previously proposed interrelationships in a marketing decision-making context. In doing so, we systematically examine differential effects of manipulations conducted during a large-scale online experiment with 1349 participants who performed a series of site selection tasks. Our assessment distinguishes between objective (decision accuracy and decision efficiency) and subjective (decision confidence and perceived ease of task) metrics as surrogate measures of decision quality and the decision process. In addition to symbolization-related factors, we manipulated task complexity and time pressure in the experimental design. Because decision makers and GIS designers have less control over the tasks to be solved and users' background characteristics, we focus the initial discussion of our major insights on the proper choice of alternative symbolizations and devices for symbol overload handling.

Discussion of Findings

First, across all manipulated symbolizations, on average, respondents selected site locations that yield 23.4% lower revenues than the optimal sites (on average, randomly selecting one of the five sites across the four tasks would result in 56.2% lower revenues than the optimal sites). However, this figure varies significantly depending on the type of symbolization used, and our results suggest that much can be gained by choosing the proper symbolization. In decreasing order of decision accuracy, circles perform best in terms of objective decision quality, followed by combined shading and distortions, shading, and bars. The findings for all other decision performance metrics confirm the superiority of circles versus other symbolizations. This also holds for more complex decision tasks, including multiple criteria to be considered. However, our findings on the decision performance of alternative symbolizations do not correspond to their respective usage intensity in marketing practice, pointing to unused potential for improvement in marketing practice.

Second, our findings suggest that the way symbol overload is handled in GIS thematic maps based on circles and bars also matters. We find that compared with circles, bars show greater sensitivity to overlap-handling options. We also find that dislocated bars result in the most significant decline in decision quality. This is noteworthy because dislocation (probably due to its precision) is frequently used in practice for handling bar overload. This suggests that the most precise representation does not always lead to better decisions and indicates the importance of a creating a Gestalt understanding of the spatial relationships.

Third, across all investigated symbolizations and overload-handling options, the best decisions, with an average decision accuracy of 87.8%, resulted from overlapping circles; the poorest decisions were derived from bars using dislocation (decision accuracy = 57.4%) to handle overload. Thus, we conclude that alternative symbolizations for the same underlying quantitative data cause remarkable differences in expected revenues of up to 30.4 percentage points. With respect to time pressure, our overall results regarding objective decision quality remain remarkably stable. We find that time pressure exerts only a direct effect on subjective decision performance metrics.

Theoretical Contribution

With respect to our theoretical contribution, we note that our results uncover problematic aggregations across various size symbolizations in a GIS context. We confirm the findings of the extant cartographic literature (Bertin 1983) regarding such questions as the dominance of the visual variable size (symbolized with circles or bars) versus the visual variable value (shading) in terms of objective decision performance. In contrast, subjective decision performance indicates hardly any difference between the visual variables size and value. The lack of differences in subjective decision performance could explain the widespread use of these three symbolizations in practice. However, our results highlight large differences between alternative size symbolizations (circles versus bars) and suggest a need to carefully reflect the usefulness of GIS thematic maps at the level of individual symbolizations. Drawing on the principles of Gestalt theory, our framework further proposes to differentiate among the various options for symbol overload handling associated with specific symbolizations. In addition, we consider combined symbolizations (shading and distortions) and assess their usefulness for marketing decision making. From the literature from psychophysics-based guided search theory, we expected higher decision performance associated with the combination of shading and distortions. We identify significantly higher levels of decision accuracy for shading and distortions in relation to the other pure symbolizations. However, confidence in the derived decisions was lower. We explain this discrepancy between objective and subjective decision quality associated with shading and distortions as being due to low usage in practice.

We found that respondents with greater map experience performed better. However, we could not find any differences between respondents with varying spatial ability. Overall, we found that making correct decisions based on maps hardly depends on the personal characteristics of the decision makers. Thus, if the appropriate symbolization is used, even people with moderate spatial ability and little map experience can identify good solutions. This finding highlights the potential of GIS thematic maps as an effective decision support tool. The limited dependence of GIS thematic maps on user characteristics also points to the potential of GIS thematic maps in facilitating communication between managers with diverse professional backgrounds.

Managerial Implications

Designers of GISs developing new toolboxes for marketing applications, such as site selection or direct marketing campaigns, can use our findings to configure their default options, such as the choice of the appropriate symbolization or the way information overload is handled. In general, dislocation of symbolic representations should be avoided. In particular, proportional symbol maps and cartograms should be available (default) options for representing quantitative data in any GIS. The relatively good performance of cartograms indicates that further/new combinations of symbolizations should be evaluated. Even when multiple criteria need to be represented in multiple proportional symbol maps, they seem to be a better option than representing the same data in fewer diagram maps. The differences identified between subjective and objective decision performance indicate that users cannot always rely on their feelings about the relative performance of symbolizations. This emphasizes the relevance of feedback mechanisms or training modules for users of GIS (Kayande et al. 2009) in helping them learn more about the potential (objective) advantages and drawbacks of specific symbolizations. A higher level of confidence regarding the appropriate symbolizations should increase their usage and help people avoid significant costs associated with incorrect site selection decisions.

Limitations and Future Research Directions

To the best of our knowledge, the experimental study we present here is among the most complete and in-depth empirical examinations of the value of GIS thematic maps in assisting decision making in a marketing context This study focuses only on static GIS thematic maps It would be worthwhile for further research to investigate whether our results are generalizable to new visualization techniques, such as dynamic mapping techniques (see, e g , the human–computer interaction laboratory [http //www cs umd edu/hcil/] that is part of the University of Maryland's Dynamaps project, which focuses on displaying spatial information as well as associated attribute data) Visualizing spatiotemporal data in marketing could indeed provide valuable information about the movement of objects in space and over time Dynamic mapping might be useful in marketing to support the identification of current or past changes at a site location, such as the development of revenues, competition, purchasing power, and so on, indicating trends in a site's attractiveness over time However, because of the limited use of dynamic mapping in site selection practice and to avoid further experimental complexity, we focused only on static methods of symbolization in our study

Appendix
Glossary

Cartogram: A map that purposefully distorts geographic space on the basis of the value of a theme (e g , making the size of zip code area proportional to purchasing power) (Slocum, McMaster, and Kessler 2009)

Choropleth Map: A map in which enumeration units (or data collection units) are shaded with intensity proportional to the data values associated with those units (Slocum, McMaster, and Kessler 2009)

Diagram Map A diagram map represents any event distribution by means of diagrams (bar or pie) that are placed on the map inside the structure of territorial division and that expresses the summarized value of this event within the limits of this territorial structure

Dislocation: An alternative way of avoiding symbol overload in which diagrams (e g , bars) are placed outside the map but are linked to their respective areas by a line

Gestalt Theory: Emphasizes higher-order cognitive processes in the context of behaviorism The focus of Gestalt theory is the idea of perceptual "grouping"—that is, characteristics of stimuli cause people's vision to structure or interpret a visual field or problem in a certain way (Wertheimer 1923) The primary factors that determine the perception of a grouping are as follows (1) proximity—elements tend to be perceived as grouped together according to their nearness, (2) similarity—items similar in some respect tend to appear as being grouped together, (3) closure—items are perceived as grouped together if they tend to complete some entity, and (4) simplicity—items are organized into simple figures according to symmetry, regularity, and smoothness These factors are called the principles of organization and are explained in the context of perception and problem solving

Isopleth Map: A map displaying the distribution of an attribute (variable) in terms of lines connecting points of equal value (Slocum, McMaster, and Kessler 2009)

Symbolization: Different types of symbols that are available in GISs for the representation of quantitative data (circles, bars, shadings, and area distortion)

Proportional Symbol Map: Point symbols are scaled in proportion to the magnitude of data at the point locations, for example, circles of varying sizes are used to represent purchasing power (Slocum, McMaster, and Kessler 2009)

Overlap: An alternative way of avoiding symbol overload in which symbols, such as circles or bars, are stacked

Size: A visual variable for which the magnitudes of the symbols are varied (e g , using circle size, bar length, or the size of distorted areas to represent purchasing power)

Symbol Overload: A phenomenon that typically occurs when many symbols need to be portrayed in a small area of the map

Symbol Squeezing: An alternative way of avoiding symbol overload in which symbols, such as circles or bars, are squeezed so that they do not overlap

Thematic Map: A map used to emphasize the spatial distribution (or pattern) of one or more geographic attributes (e g , population per zip code area) (Slocum, McMaster, and Kessler 2009)

Value (Shading): A visual variable that symbolizes quantitative data through shadings, with the relative brightness or darkness (whether black or any other color) proportional to the attribute (e g , purchasing power) to be presented

Visual Variables: A specified set of symbols that can be applied to data to translate information

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Glenn B. Voss, Andrea Godfrey, & Kathleen Seiders

How Complementarity and Substitution Alter the Customer Satisfaction–Repurchase Link

Customer satisfaction is universally acknowledged as a key driver of customer repurchase behavior, but recent evidence suggests that satisfaction has no effect on repurchase under certain circumstances. In this study, the authors develop a framework for understanding the complex relationships among satisfaction, moderating variables, and repurchase. They propose that the satisfaction–repurchase link is subject to complementary and substitute effects and present satiation and inertia as key theoretical mechanisms that explain and predict those effects. In weak-satiation purchase categories, complementary effects are more likely, which suggests that managers should invest in customer satisfaction *and* complementary initiatives simultaneously. In strong-satiation purchase categories, substitute effects are more likely, which suggests that managers should invest in either customer satisfaction *or* substitute initiatives. An empirical test combining survey and longitudinal purchase data from two categories—fashion apparel and automobile service—provides a remarkable degree of support for the propositions. The findings offer new theoretical insights and substantive guidance for managers to effectively allocate resources to initiatives that complement or substitute for customer satisfaction.

Keywords: satiation, repurchase behavior, customer satisfaction, complementarity, substitution

A large literature stream draws conceptual links between customer satisfaction and repurchase (Oliver 2009), and satisfaction has been linked empirically to a variety of customer repurchase behaviors (e.g., Bolton, Lemon, and Bramlett 2006; Cooil et al. 2007; Mittal and Kamakura 2001). Oliver (1999) views satisfaction as a necessary step in loyalty formation and argues that for many firms, satisfaction should be the primary goal. In practice, firms commonly emphasize satisfaction, assess their ability to deliver it, and believe it to be the best solution to ensure customer retention.

Despite theoretical and empirical support for satisfaction as a key driver of repurchase intentions and behaviors, recent evidence suggests that satisfaction has no effect on repurchase under certain circumstances (e.g., Agustin and Singh 2005, Seiders et al. 2005, Verhoef 2003). Though intriguing, these results produce unresolved questions because theoretical understanding of the phenomenon is inadequate to fully explain when and why satisfaction may have no effect on repurchase.

Seiders and colleagues' (2005) conceptual framework provides a good starting point for systematically examining potential moderators of the satisfaction–repurchase relationship. The authors propose that three broad factors can moderate the relationship between satisfaction and repurchase: customer, relational, and marketplace characteristics. They conclude that satisfaction may have no impact on repurchase for low-involvement or low-income customers or when repurchase is not convenient (a marketplace characteristic). They fail to find moderating effects for relational characteristics.

However, other studies find moderating effects for relational characteristics. For example, Cooil and colleagues (2007) find that relationship duration moderates the effect of satisfaction on bank customers' share of wallet. Van Doorn and Verhoef (2008) find that critical exchange incidents moderate the relationship between ongoing satisfaction and repurchase. The authors conclude that inertia is the key driver of repurchase and that satisfaction has no effect on repurchase unless customers experience a service failure, at which point satisfaction becomes an important determinant.

Managerial practice is undermined by the prospect that satisfaction may, under certain circumstances, have no effect on repurchase. Seeking to encourage customer repurchase, managers may question whether to focus their efforts on further increasing customer satisfaction or on initiatives

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that can increase repurchase independent of changing satisfaction with the core offering—for example, (1) effectively targeting customers who are predisposed to higher repurchase rates, (2) executing relationship-building programs that encourage higher repurchase rates, or (3) increasing the convenience of repurchasing. Extant marketing research offers little guidance because theoretical explanation and insight are lacking.

We contribute to current understanding by proposing satiation and inertia as key determinants of the relationships among satisfaction, moderating variables, and repurchase. The resultant conceptualization provides a theoretical lens for predicting systematic differences in moderating effects across different purchase categories. In purchase categories in which satiation effects are weak, moderating variables can complement satisfaction to increase repurchase. However, in purchase categories in which satiation effects are strong and inertia manifests, moderating variables can substitute for satisfaction in determining repurchase.

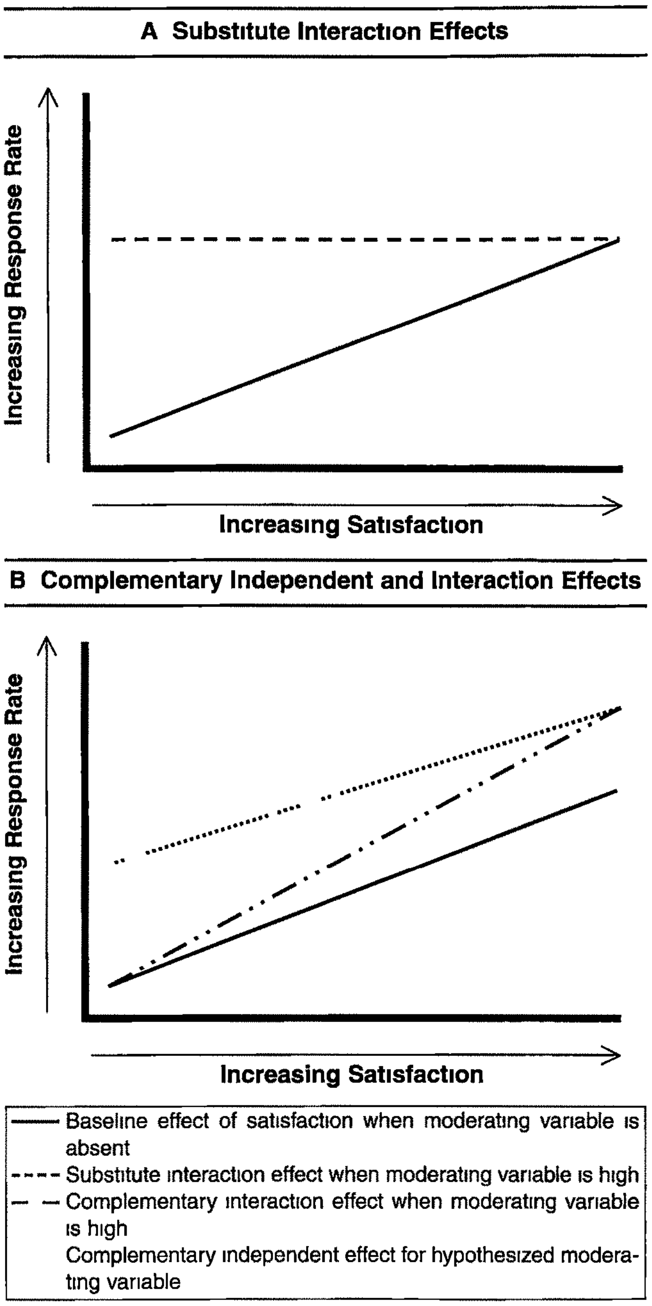
We test our theory using large samples from two purchase categories—fashion apparel and automobile service—that exhibit different levels of satiation. Both data sets integrate customer survey data with longitudinal purchase data. These data enable us to explicitly test whether interactions between satisfaction and customer, relational, and marketplace characteristics vary across purchase categories. The empirical results indicate that all six variables examined complement satisfaction in the weak-satiation, fashion apparel category. Four of the six variables substitute for satisfaction in the strong-satiation, automobile service category. These results provide substantive guidance for effectively allocating resources to marketing initiatives that complement or substitute for satisfaction.

In the following sections, we explicate the difference between complementary and substitute effects. We explain how satiation and inertia affect customer repurchase, producing complementary effects in weak-satiation purchase categories and substitute effects in strong-satiation purchase categories. We then describe our two data sets and the empirical results and close with a discussion of research and managerial implications.

Theoretical Development

We begin with the assumption that customer satisfaction is the primary determinant of customer repurchase. Our goal is to better understand why two customers with similar satisfaction levels repurchase at different levels—that is, why satisfaction is not a perfect predictor of repurchase and why and how other factors may influence repurchase. Prior empirical research has examined a variety of moderating variables (see Table 1), but little attention has been given to explaining the conceptual nature of the relationship between customer satisfaction and potential moderating variables.

FIGURE 1
Plotting the Functional Forms of Substitute and Complementary Effects



A Substitute Interaction Effects

B Complementary Independent and Interaction Effects

Figure 1 depicts two types of moderation that can change the relationship between satisfaction and repurchase. Panel A in Figure 1 presents a substitute interaction between satisfaction and a moderating variable. When two variables interact as substitutes, the marginal benefit of each variable decreases as the level of the other variable increases (e.g., Siggelkow 2002). Given a positive baseline effect of satisfaction on repurchase (the solid line in Panel A), substitute interactions reduce or even eliminate the positive effect of satisfaction (the dashed line in Panel A). This type of substitute effect requires quasi moderation such that the moderating variable exerts a significant main effect that shifts the line upward and the interaction term takes on the opposite sign to flatten the slope of the curve (see Sharma, Durand, and Gur-Arie 1981). From a managerial perspective, substitute interactions suggest that repurchase can be increased by allocating resources to either satisfaction or

TABLE 1
Recent Studies of Moderating Effects of the Satisfaction–Repurchase Behavior Link

Moderators		Repurchase Behavior	Study Context (Design)	Study
Characteristics	**Effect Type**			
Relational Characteristics				
Heavy user	Substitute	Share of category requirements^{RB}	Consumer package goods (cross-sectional)	Bowman and Narayandas (2001)
Firm size	Substitute	Share of customer wallet^{RB}	B2B processed metal (longitudinal)	Bowman and Narayandas (2004)
Age	No effect	Change in share of wallet^{RB}	Banking (longitudinal)	Cooil et al (2007)
Education	No effect			
Expertise	No effect			
Income	Substitute			
Age	No effect	a Share of purchases^{RB} b Share of visits^{RB}	Grocery stores (longitudinal)	Magi (2003)
Apathetic orientation	No effect			
Economic orientation	Complementary^{INV} (a only)			
Personalizing orientation	Substitute			
Purchase volume	Complementary (a only)			
Age	Substitute	Repurchase percentage^{OB}	Automobile manufacturer (longitudinal)	Mittal and Kamakura (2001)^{a}
Children	Substitute			
Education	Substitute			
Gender	Substitute			
Marital status	No effect			
Household income	Complementary (a and b only)	a Repurchase visits^{OB} b Repurchase spending^{OB} c Repurchase intentions^{IS}	Fashion apparel (longitudinal)	Seiders et al (2005)
Product category involvement	Complementary (b only) Substitute (c only)			
Relational Characteristics				
Relational value	Complementary	Loyalty intentions^{IS}	Retail clothing Airline travel (cross-sectional)	Agustin and Singh (2005)
Length of experience	Complementary	Relationship duration^{OB}	Telecommunications (longitudinal)	Bolton (1998)
Loyalty	Complementary	Share of category requirements^{RB}	Consumer package goods (cross-sectional)	Bowman and Narayandas (2001)
Account management tenure	Complementary	Share of customer wallet^{RB}	B2B processed metal (longitudinal)	Bowman and Narayandas (2004)
Relationship duration	Substitute	Change in share of wallet^{RB}	Banking (longitudinal)	Cooil et al (2007)
Relational orientation	Substitute	Future intentions^{IS}	Professional theater (cross-sectional)	Garbarino and Johnson (1999)
Interpersonal relationships	Substitute	Repurchase intentions^{IS}	Banking and hair salon (cross-sectional)	Jones, Mothersbaugh, and Beatty (2000)
Relationship duration	Substitute	Recommendation intentions^{IS}	Automotive service (longitudinal)	Mittal, Kumar, and Tsiros (1999)
Relationship age	Complementary^{IND} (a and b only)	a Repurchase visits^{OB} b Repurchase spending^{OB} c Repurchase intentions^{IS}	Fashion apparel (longitudinal)	Seiders et al (2005)
Relationship program	Complementary^{IND} (a and b only)			
Negative critical incidents	Substitute	Customer share^{RB}	B2B logistics services (longitudinal)	Van Doorn and Verhoef (2008)
Relationship age	Complementary (a only)	a Customer retention^{OB} b Customer share development^{OB}	Insurance (longitudinal)	Verhoef (2003)

TABLE 1
Continued

Moderators				
Characteristics	**Effect Type**	**Repurchase Behavior**	**Study Context (Design)**	**Study**
Marketplace Characteristics				
Service quality	Complementary	Contract upgrade likelihood^{OB}	B2B computing support (longitudinal)	Bolton, Lemon, and Verhoef (2008)
Satisfaction with competitor	Substitute^{INV}	Share of customer wallet^{RB}	B2B processed metal (longitudinal)	Bowman and Narayandas (2004)
Attractiveness of alternatives	Substitute^{INV}	Repurchase intentions^{IS}	Banking and hair salon (cross-sectional)	Jones, Mothersbaugh, and Beatty (2000)
Switching costs	Substitute			
Urban versus suburban	No effect	Repurchase behavior^{OB}	Automobile manufacturer (longitudinal)	Mittal and Kamakura (2001)
Competition	Complementary^{IND} (a only)	a Repurchase visits^{OB} b Repurchase spending^{OB} c Repurchase intentions^{IS}	Fashion apparel (longitudinal)	Seiders et al (2005)
Convenience	Complementary (a and b) Complementary^{IND} (c)			

[a] We make inferences for some studies in which the analyses are not easily amenable to interpretation of complementary or substitute effects For example, Mittal and Kamakura (2001) examine threshold effects associated with demographic characteristics and different satisfaction levels Our assignment of substitute effects is based on the graphs that appear in their Figure 3 In each case, the results for repurchase percentage tend to converge when satisfaction is highest and the slopes are flatter or steeper depending on the demographic characteristic These graphs are most similar to the substitute interaction graph in our Figure 1

Notes B2B = business-to-business, IS = intentions survey measure, RB = reported behavior measure, and OB = observed behavior measure Unless otherwise noted, "complementary" and "substitute" indicate interaction effects IND = complementary independent effects, and INV = interaction effect between satisfaction and negatively valenced moderating variable (e g , the lack of satisfaction with competitors or lack of attractive alternatives substitutes for satisfaction)

the substitute, depending on the marginal return for the respective initiatives When substitute effects are strong, as Panel A depicts, simultaneous investments in satisfaction and the substitute would produce diminishing or even negative returns Several empirical studies report substitute moderating effects on the satisfaction–repurchase relationship (see Table 1)

Two variables can also interact as complements, which implies that the marginal benefit of each variable increases as the level of the other variable increases A complementary interaction enhances the positive effect of satisfaction on repurchase, as the dashed and dotted line in Figure 1, Panel B, depicts From a managerial perspective, complementary interactions suggest ways to increase the repurchase rates of the most satisfied customers by investing simultaneously in satisfaction and the complement Several empirical studies report complementary moderating effects on the satisfaction–repurchase relationship (see Table 1)

Although both substitute and complementary effects are typically conceptualized as interactions, complementary effects can also be independent A complementary independent effect increases repurchase independent of the effect of satisfaction, we represent this with the dotted line in Figure 1, Panel B From a managerial perspective, complementary independent effects suggest ways for marketers to increase the repurchase rates of all customers For example, Seiders and colleagues (2005) hypothesize that relational characteristics should exert complementary moderating effects on the satisfaction–repurchase relationship, but the empirical results indicate complementary independent effects

Empirical evidence indicates that the link between satisfaction and repurchase is subject to both complementary and substitute effects It is also clear that managerial implications are different depending on the presence of complements versus substitutes With that in mind, we propose satiation and inertia as the underlying theoretical mechanisms to explain the emergence of complementary and substitute effects

Satiation has attracted considerable research attention in a wide variety of consumption and sensory contexts Satiation can be conceptualized and measured at the individual level or at the purchase category level, which is the focus in the current study Individual-level satiation is a temporary reduction or cessation of consumptive behavior (e g , McSweeney 2004), for example, a person's desire to consume food is lower after eating a large meal, and the need for fuel is lower after filling the automobile's tank Individual satiation levels vary across both time and individuals, so that some people may consume more food or fuel than others

We adopt the economic perspective of satiation, which maintains that the marginal utility of consumption varies across purchase categories The role of satiation in economic consumption was first recognized more than a century ago, when economists observed decreasing allocations of household spending for food as living standards increased These observations evolved into Engel's law, which holds that "the consumption of any (basic category of) good cannot be expanded beyond its satiation level" (Andersen 2001, p 147) Satiation implies that as consumption in a purchase category increases, the marginal utility of additional consumption in that category goes to zero Economists measure satiation by examining how individual household consumption within a purchase category varies across different income levels Much as marketers infer company- or industry-level satisfaction by aggregating satisfaction scores across individual customers, economists infer purchase category satiation by aggregating category consumption levels across individual households

The economic perspective of satiation implies that different purchase categories are subject to weaker or stronger satiation effects In the sections that follow, we propose that customer, relational, and marketplace characteristics exert complementary effects when satiation effects are weak and substitute effects when satiation is strong and inertia manifests

Weak Satiation and Complementary Effects

Weak satiation effects manifest when demand for the purchase category increases as income increases Weak satiation effects are associated with discretionary, luxury, or hedonic products, for such products, search and purchase behavior emphasizes variety and aesthetic or emotional benefits Dining out at restaurants is frequently cited as a weak-satiation purchase category Du and Kamakura (2008) report that spending on dining out increases from less than 4% of total expenditures for households in the lowest income decile to nearly 8% for households in the highest decile, illustrating that household spending in the category increases as income increases Other weak-satiation categories include education, lodging, air transportation, and apparel

At the limit, customer desires in weak-satiation categories are insatiable, so that the marginal utility of consumption remains positive even when consumption reaches very high levels Extreme manifestations of this type of behavior are compulsive shopping or shopping addictions For marketers in these purchase categories, insatiability implies that individual characteristics or effective marketing initiatives can encourage even the most satisfied customers, who currently allocate 100% of their wallet to the focal seller, to increase their repurchase rate and overall size of wallet

This type of consumption behavior is consistent with the complementary independent and moderating effects we depict in Figure 1, Panel B If we accept that satisfaction is the primary determinant of customer repurchase, complementary effects can occur only if satiation effects are weak This is because customers with the highest satisfaction should already repurchase at the highest rates Complementary variables can elicit even higher repurchase only if the marginal utility of additional consumption is still positive for the most satisfied customers By definition, this can only occur in weak-satiation purchase categories This leads to our first proposition

P_1 In weak-satiation purchase categories, customer, relational, and marketplace characteristics exert complementary effects that enhance the positive effect of satisfaction on repurchase

Strong Satiation, Inertia, and Substitute Effects

Strong satiation effects imply that demand for the purchase category decreases as income increases Strong satiation effects are associated with essential, utilitarian, commodity products, for such products, differentiation is limited and search and purchase behavior emphasizes functional benefits Food consumed at home is frequently cited as a purchase category subject to strong satiation effects Du and Kamakura (2008) report that spending on food consumed at home decreases from nearly 30% of total expenditures for households in the lowest income decile to less than 15% for households in the highest decile, illustrating that as income increases, relative household spending in the category decreases Other strong-satiation categories include telecommunications, public transportation, automobile services, and fuel

In purchase categories in which satiation effects are strong, customer wants or needs are quickly sated Beyond the point of satiation, customers derive zero marginal utility from additional consumption This internal constraint creates a ceiling to the amount a customer is willing to spend in that category This ceiling effect should be most pronounced for very satisfied customers who already allocate most or all of their wallet to a focal seller If these very satisfied customers are already satiated, there is no utility associated with additional consumption so that complementary effects are precluded Thus, satiation explains the upper limit to repurchase, as we depict with the dashed line in Panel A of Figure 1

Satiation does not explain why moderately satisfied customers might repurchase at the same rate as highly satisfied customers—that is, how to move moderately satisfied customers from the solid line to the dashed line in Panel A of Figure 1 Inertia provides a compelling explanation for these substitute effects Inertia is defined as habitual repurchase with little information search or alternative evaluation (Assael 2003) Empirical research frequently examines inertia as the probability that customers will repeat observed purchase behavior in the future (e g , Seetharaman, Ainslie, and Chintagunta 1999) Brand inertia implies that previous purchase of a brand increases the probability of future purchase of the brand (Chintagunta 1998)

Inertia effects also manifest at the purchase category level (e g , Jeuland 1979, Seetharaman, Ainslie, and Chintagunta 1999) For our purposes, purchase category inertia implies that previous patronage of a retail company increases the probability of future patronage of that company Inertial repurchase behavior is most likely in strong-satiation purchase categories that feature low-involvement, frequently purchased, commodity goods (Corstjens and Lal 2000) In these categories, customers engage in routinized repurchase behavior that simplifies decision making and ensures consistency Inertial loyalty likely continues as long as disconfirmation of expectations does not occur With minimal product differentiation in strong-satiation purchase categories, inertial repurchase might be very high even if the customer is only moderately satisfied Panel A in Figure 1 depicts this substitute interaction effect

Substitute effects imply that managers can effectively reduce investments in satisfaction-oriented initiatives in the presence of inertia effects, focusing instead on encouraging habitual repurchase patterns (Agustin and Singh 2005) Several studies report inertia effects in conjunction with firm-level satisfaction For example, Van Doorn and Verhoef (2008) conclude that inertia is the key driver of repurchase unless customers experience a service failure Cooil and colleagues' (2007) results suggest that inertia explains the proclivity of long-term customers to maintain accounts at their primary bank The results of both studies imply that relational inertia and satisfaction substitute for each other This leads us to our second proposition

P_2 In strong-satiation purchase categories, customer, relational, and marketplace characteristics exert substitute effects that attenuate the positive effect of satisfaction on repurchase

Empirical Application

Theory predicts complementary effects in weak-satiation categories and substitute effects in strong-satiation categories To test these predictions, we examine whether customer, relational, and marketplace characteristics complement or substitute for satisfaction in a weak-satiation and a strong-satiation purchase category Our research design features customer survey measures and longitudinal purchase activity in each category

We used fashion apparel, a hedonic, discretionary purchase category, as the weak-satiation category Our industry partner was a women's apparel specialty retailer with stores in upscale malls and urban centers in major geographic regions of the United States The sampling frame included 3117 randomly selected customers who had purchased at any of the company's stores within the last year These customers received a letter of introduction from the company's founder and an offer for a $20 store coupon on completion of the survey Nonrespondents received one follow-up contact This produced 954 usable responses, for a 31% response rate Respondents were primarily women (99%), were between the ages of 35 and 54 years (66%), had at least some college education (96%), and had an average household income exceeding $58,000

We used automobile service, an essential, utilitarian purchase category, as the strong-satiation category Our industry partner was a large auto dealership with a high-volume service department The sampling frame included 3370 randomly selected customers who had visited the company's service department within the last year We sent each customer a survey packet that included a letter from the owner of the dealership, a five-page survey, a postage-paid return envelope, and an offer for a $5 gift card (issued by a national doughnut and coffee chain) on return of the completed questionnaire Nonrespondents received one follow-up contact The two mailings produced 1162 complete responses, for a 34% response rate The majority of the respondents were men (57%), were between the ages of 35 and 64 years (60%), had some technical or university education (69%), and had an average household income exceeding $63,000 (66%)

The empirical analyses examined two measures of repurchase repurchase visits and repurchase spending Each analysis modeled repurchase as a function of purchase category characteristics (weak and strong satiation), customer satisfaction, customer characteristics (involvement and income), relational characteristics (relationship age and relationship-building program), and marketplace characteristics (convenience and competitive density) With the exception of the satiation measure, all variables were standardized within purchase category To control for omitted variables, we included the lagged dependent variable as a predictor in each model We implemented Heckman's (1979) two-step procedure to control for selection bias We present the empirical model in the Appendix along with measurement detail, descriptive statistics, and correlation matrices for the variables of interest, which we now describe

Dependent Variables

For each fashion apparel and auto service customer, we matched survey responses with corresponding objective data from the company's customer relationship management database Both databases included one year of postsurvey purchase visits and spending (dependent variables) and one year of presurvey purchase visits and spending (lagged dependent variables) We log-transformed the repurchase measures to improve distribution normality There is a potential confound in the automobile service context due to warranty services for which the customer does not pay To address this, we estimated the models twice, first using all service visits and spending as the dependent variables and then using only visits and spending for nonwarranty services The inferences for the hypothesized relationships were similar for the two analyses We report results for visits and spending for nonwarranty services

Satiation Index

We used Du and Kamakura's (2008) data to create a satiation index for each purchase category based on the change in the percentage of household consumption allocated to the purchase category as a function of income [1] We eliminated basic household utility categories, such as household electricity and household gas and coal, and used 29 purchase categories We calculated the percentage change in household income allocations to the purchase category between the top decile and the seventh decile, eliminating the bottom three deciles to avoid distortions due to poverty effects (for the formula, see Table A1 in the Appendix) We then standardized satiation values so that larger positive (negative) values indicate that households allocate a smaller (larger) percentage of their consumption budget to the purchase category as income increases Thus, negative satiation index values indicate weak-satiation purchase categories, and positive satiation index values indicate strong-satiation purchase categories The satiation index value was – 10 for the weak-satiation apparel category and 11 for the strong-satiation automobile service category

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[1] We thank Du and Kamakura (2008) for providing the data for this comparative analysis We also note that the analysis understates the difference between our two empirical contexts because our context is fashion apparel whereas Du and Kamakura's data aggregate across all apparel

Selection Control Factor

To control for selection bias that arises from systematic survey nonresponse, we implemented Heckman's (1979) two-step procedure First, we estimated the probability of selecting survey respondents in each purchase category using the prior year's purchase spending, the prior year's purchase visits, and geographic location for the fashion apparel category and number of cars for the automobile service category Second, we created the inverse Mill's ratio for each respondent Including this selection control factor as an independent variable in the empirical model controls for the effect of unmeasured characteristics related to the selection process We included a satiation index × selection control variable interaction to allow the coefficient to vary across purchase categories

Customer Satisfaction

We conceptualize customer satisfaction as a cumulative, global evaluation based on experience with a firm over time We expect satisfaction to have a positive main effect on repurchase, likely moderated by satiation and customer, relational, and marketplace characteristics We measured satisfaction using a three-item scale (Voss, Parasuraman, and Grewal 1998) that exhibited excellent reliability in both purchase categories ($\alpha =$ 89 and 94)

Customer Characteristics

Customer characteristics operate at the individual level and can be used to identify more or less valuable customers (i e , those with higher or lower repurchase rates) Our empirical model includes two customer characteristics Purchase category involvement is the importance or relevance of the purchase category based on the customer's inherent needs, values, and interests and is an enduring rather than situational state (Celsi and Olson 1988) Household income is the combination of income from all workers in the household

We measured involvement using three similarly worded items (Beatty and Talpade 1994) The scale exhibited satisfactory reliability in the fashion apparel context ($\alpha =$ 86) A negatively valenced item in the automobile service context ("I don't have any interest in knowing about auto maintenance and repairs") exhibited low correlations with the other two items, and we dropped it from the analysis The reliability for the resulting two-item scale ($\alpha =$ 66) was slightly below the desired level We measured income as the median household income reported in the 2000 census for the respondent's zip code Several studies conclude that zip code–level household income data are more reliable than self-report income data (e g , Bricker and Engelhardt 2008, Kleck 1982) [2]

Relational Characteristics

We examine two relational characteristics that capture formal and informal bonds between a company and its customers Relationship age is the number of years a customer has maintained an exchange relationship with the focal firm Relationship-building programs are targeted communications initiatives designed to increase repurchase through promotions or by enhancing customers' perceptions of the company's relationship investment (De Wulf, Odekerken-Schroder, and Iacobucci 2001, Rust, Lemon, and Zeithaml 2004)

We used the same self-report measure for relationship age in both samples (i e , "How long have you been a _____ customer?") The measures for relationship-building programs were different, but they accurately reflected the programs implemented by the two companies In the fashion apparel context, we measured relationship-building program as a dichotomous variable indicating whether the customer had opted in to the company's e-mail program The fashion apparel company used an opt-in e-mail program to target customers on the e-mail list differently than customers who were not on the e-mail list All customers on the e-mail list received identical messages that followed the fashion season, announcing new merchandise arrivals and end-of-season sale events In the automobile service context, we measured relationship-building program as the number of outgoing marketing contacts directed toward each customer The automobile service company's relationship-building program targeted customers with customized messages at different times, reminding customers that their cars were due for service and following up with after-service thank-you messages The dichotomous measure of relationship-building program is appropriate for the fashion apparel context, and the continuous measure of relationship-building program is appropriate for the automobile service context [3]

Marketplace Characteristics

Marketplace characteristics feature interactions among customers, the focal firm, and competing firms that influence repurchase patterns We examine two marketplace characteristics Convenience is a multidimensional construct that reduces time and effort costs for customers (Berry, Seiders, and Grewal 2002) Competitive density is the level of direct competition the focal firm faces within its immediate business domain (Voss and Voss 2008)

To measure convenience, we used the reduced, five-item convenience scale validated by Seiders and colleagues (2007) in both contexts Using census data, we operationalized competitive density as the number of competitors in each respondent's zip code for automobile dealerships and automobile repair (North American Industry Classification System [NAICS] codes 441110, 441120, and 811111–

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[2] We checked the robustness of the income results by estimating the empirical models using self-reported income for the automobile service category only, we did not have self-report income data for the fashion apparel category All results were replicated

[3] We also estimated the empirical models with a dichotomous measure for the automobile service relationship-building program, using a mean split to specify low-contact and high-contact customers This specification, which approximates the dichotomous measure used in the fashion context, produced the same inferences for the hypothesized relationships

811198) and women's clothing and related items and accessories (NAICS codes 448120 and 442299)

Empirical Results

We present the empirical results in Table 2 To assess stability of individual coefficients and overall model fit, we present three hierarchical models for each dependent variable Model 1 shows main effects and interaction effects between satisfaction and the satiation index and customer, relational, and marketplace characteristics Model 2 adds interaction effects between satiation and customer, relational, and marketplace characteristics Model 3 adds three-way interactions There was no evidence that multicollinearity was a concern To assess overall fit of the hypothesized models, we use the Bayesian information criterion

For both dependent variables, Model 3 demonstrates the best overall fit, which suggests that the three-way interactions are important As we expected, the lagged dependent variable has significant, positive effects in all models The satiation index exerts a negative effect on visits in all models and a marginally significant, negative effect on spending in Model 2 Satisfaction has a significant, positive effect on visits and a marginally positive effect on spending in Model 3 A comparison of results across dependent variables indicates substantially similar results, especially for the three-way interactions, which are closely replicated in terms of sign and significance levels

Theory predicts that the customer, relational, and marketplace characteristics should complement satisfaction in the weak-satiation, fashion apparel category and substitute for satisfaction in the strong-satiation, automobile service category A negative three-way interaction among satiation, satisfaction, and a characteristic provides full support for a complementary effect in the weak-satiation category and a substitute effect in the strong-satiation category The combination of a negative two-way interaction between satiation and a characteristic and a positive two-way interaction between satisfaction and the characteristic also supports a

TABLE 2
Empirical Results with Repurchase Visits and Repurchase Spending as Dependent Variables

	Repurchase Visits			Repurchase Spending		
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Intercept	02	03**	03*	02	04*	03
Lagged dependent variable	30***	30***	29***	35***	34***	33***
Selection control factor	– 22***	– 23***	– 23***	– 37***	– 38***	– 38***
Satiation index	– 24*	– 34**	– 18**	– 27	– 38*	– 12
Satiation × selection control	–1 12***	–1 20***	–1 24***	–1 77***	–1 80***	–1 85***
Satisfaction	06**	05**	07***	04	03	07*
Involvement	04**	05***	04***	07***	09***	08***
Household income	01	01	01	01	01	01
Relationship age	02	03**	03**	03	05**	05**
Relationship-building program	12***	13***	14***	17***	19***	20***
Convenience	05**	06***	05**	08***	09***	08**
Competitive density	01	02	02	01	01	01
Satisfaction × satiation	**53*** **	**70*** **	**.36* **	**35* **	**.65** **	11
Satisfaction × involvement	01	01	02	03	**.04* **	**05** **
Satisfaction × income	02	01	02	– 01	– 02	01
Satisfaction × relationship age	– 01	– 01	– 00	– 01	– 01	– 00
Satisfaction × relationship building	**–.03** **	**–.03* **	– 01	– 03	– 03	01
Satisfaction × convenience	02	01	02	00	– 01	02
Satisfaction × competitive density	00	01	01	02	03	**.04* **
Satiation × involvement		**–.57*** **	**– 56*** **		**–.89*** **	**–.87*** **
Satiation × income		– 08	– 10		14	11
Satiation × relationship age		**– 42*** **	**–.42*** **		**–.81*** **	**– 81*** **
Satiation × relationship building		**–.40** **	**– 43*** **		**–.44** **	**–.49** **
Satiation × convenience		– 03	– 02		– 05	– 03
Satiation × competitive density		**– 32** **	**– 32** **		**–.35* **	**–.36* **
Satisfaction × satiation × involvement			04			– 00
Satisfaction × satiation × income			**–.51*** **			**–.68*** **
Satisfaction × satiation × relationship age			– 08			– 16
Satisfaction × satiation × relationship building			**– 29** **			**– 51** **
Satisfaction × satiation × convenience			**–.34** **			**– 50*** **
Satisfaction × satiation × competitive density			– 11			– 21
Bayesian information criterion (BIC)	4889 0	4867 2	4858 1	6650 9	6623 4	6609 9
Δ in BIC compared with Model 1		21 8	30 9		27 5	41 0

*$p <$ 10 (one-tailed test)
**$p <$ 05 (one-tailed test)
***$p <$ 01 (one-tailed test)
Notes Significant interactions are in bold for visual clarity

complementary effect in the weak-satiation category and/or a substitute effect in the strong-satiation category. A negative two-way interaction between satiation and a characteristic without a three-way interaction or two-way interaction between satisfaction and the characteristic offers support for a complementary independent effect in the weak-satiation category.

In Model 3, for both dependent measures, all six characteristics demonstrate either negative two-way interactions with satiation or negative three-way interactions. Because the results for repurchase visits and repurchase spending for these key interactions are similar, the remaining investigations emphasize the repurchase spending results in Model 3.

Results for Customer Characteristics

We first examine results for the two customer characteristics, purchase category involvement and household income. The satiation × involvement interaction is significantly negative ($\beta = -.87$, $p < .01$), and the satisfaction × involvement interaction is significantly positive ($\beta = .05$, $p < .05$). Collectively, these two significant interactions suggest that the relationship between satisfaction and repurchase spending is significantly different depending on the purchase category and the involvement of the customer.

To provide greater insight, we plot the relationship between satisfaction and repurchase spending for high- and low-involvement customers (±1 standard deviation) in the weak- and strong-satiation categories in Figure 2, Panel A. The graph covers satisfaction levels one standard deviation below and above the mean, which translates to just above 3 to approximately 5 on the five-point satisfaction scale. We follow Aiken and West (1991) in calculating simple slope coefficients and show significant coefficients only in the graph.

The graph in Panel A suggests that involvement complements satisfaction in the weak-satiation category. High-involvement customers respond positively when satisfied ($\beta = .11$, $p < .05$). Low-involvement customers do not respond to satisfaction, but neither do they appear to exhibit inertia; instead, they demonstrate low levels of repurchase regardless of the satisfaction level. Compared with low-involvement customers, high-involvement customers repurchase more if moderately satisfied and much more if very satisfied.

The graph in Panel A suggests inertia and an inverse substitute effect for involvement in the strong-satiation category; that is, the lack of involvement substitutes for satisfaction. Low-involvement customers in the strong-satiation category appear to exhibit inertia, resulting in relatively high repurchase rates and a nonsignificant relationship between satisfaction and repurchase. High-involvement customers respond positively when satisfied ($\beta = .13$, $p < .01$). Compared with low-involvement customers, high-involvement customers repurchase less if moderately satisfied and slightly more if very satisfied.

The significantly negative ($\beta = -.68$, $p < .01$) satisfaction × satiation × income interaction is also consistent with expectations. According to Panel B in Figure 2, income complements satisfaction in the weak-satiation category, in which the highest level of repurchase occurs when high-income customers are very satisfied ($\beta = .14$, $p < .05$). Satisfaction has no effect on repurchase by low-income customers, who exhibit moderate levels of repurchase at all levels of satisfaction. This indicates that low-income customers' response to satisfaction may be constrained by their inability to repurchase. Panel B indicates that income substitutes for satisfaction in the strong-satiation category. High-income customers repurchase at high levels regardless of satisfaction. Satisfaction drives repurchase by low-income customers ($\beta = .15$, $p < .01$), who repurchase much less than high-income customers if moderately satisfied and about the same if very satisfied.

Results for Relational Characteristics

We now examine the results for the two relational characteristics, relationship age and relationship-building program. The satiation × relationship age interaction is significantly negative ($\beta = -.81$, $p < .01$), which suggests that relationship age complements satisfaction in the weak-satiation category. Panel C in Figure 2 supports this interpretation. Relationship age has positive, independent effects ($\beta = .13$, $p < .01$) on repurchase in the weak-satiation category and no effect on repurchase in the strong-satiation category. The lack of effect for relationship age in the strong-satiation category suggests that customers are driven by inertia so that increasing relationship age has no effect on repurchase.

The significantly negative ($\beta = -.51$, $p < .05$) satisfaction × satiation × relationship-building program interaction is consistent with expectations. Panel D in Figure 2 shows that relationship-building programs have strong main effects on repurchase in both categories, but the interaction with satisfaction is different across categories. In the weak-satiation category, customers who are targeted with relationship-building communications repurchase more than customers who receive fewer communications. The high relationship-building targets in the weak-satiation category repurchase even more when satisfaction is very high ($\beta = .14$, $p < .10$), but low relationship-building targets do not respond to satisfaction, perhaps because of a lack of awareness or interest.

In the strong-satiation category, customers receiving many relationship-building communications repurchase much more than customers receiving fewer communications. However, customers targeted by the relationship-building program appear to exhibit inertia with the auto service provider, so that satisfaction has no effect on repurchase. For low relationship-building target customers, satisfaction drives repurchase ($\beta = .13$, $p < .01$).

Results for Marketplace Characteristics

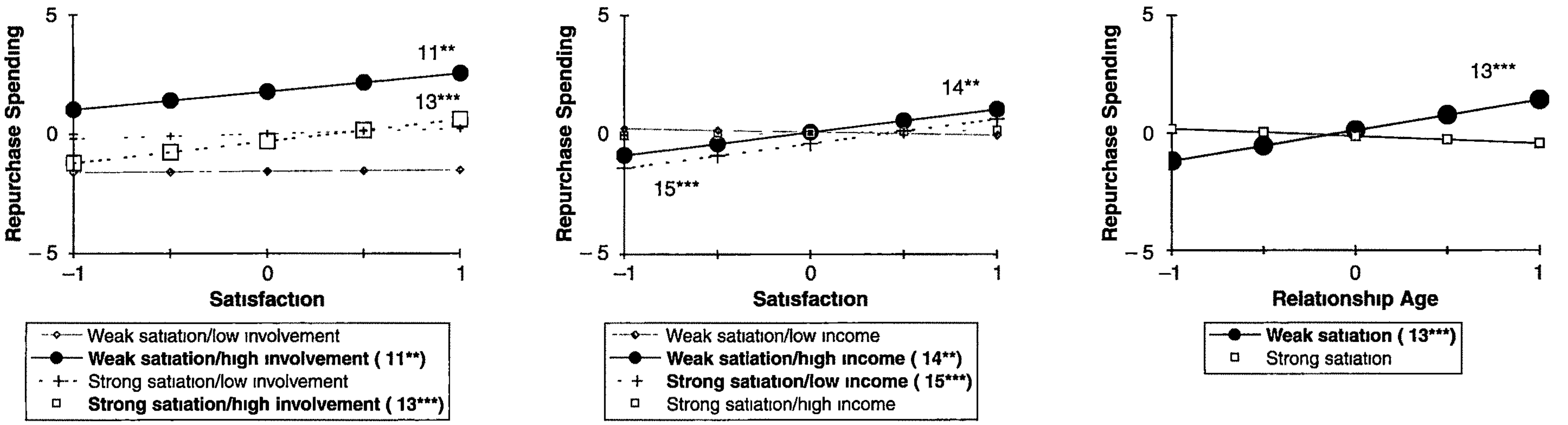
The results for the two marketplace characteristics, convenience and competitive density, are also consistent with expectations. We depict the significantly negative ($\beta = -.50$, $p < .01$) satisfaction × satiation × convenience interaction in Figure 2, Panel E. This shows that convenience complements satisfaction in the weak-satiation category. Customers who perceive high convenience repurchase more as their satisfaction levels increase ($\beta = .13$, $p < .10$). Customers who perceive low convenience repurchase less on average, regardless of their satisfaction levels. These effects are reversed in the strong-satiation category, in which con-

FIGURE 2
Plotting Significant Complementary and Substitute Effects

A: Complementary and Substitute Effects for Involvement

B: Complementary and Substitute Effects for Household Income

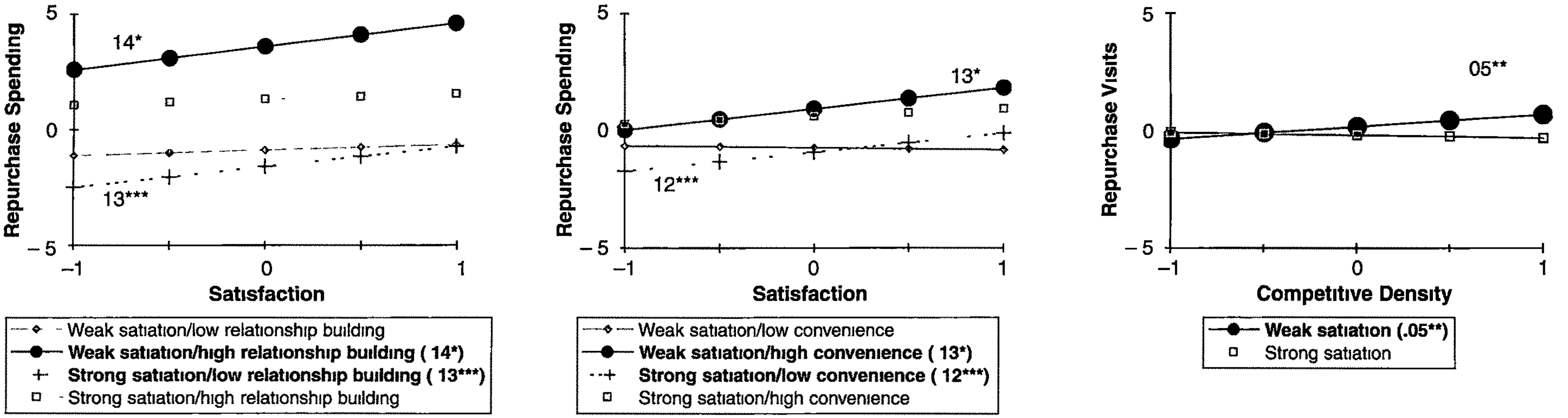
C. Complementary Effect for Relationship Age



D: Complementary and Substitute Effects for Relationship-Building Programs

E· Complementary and Substitute Effects for Convenience

F: Complementary Effect for Competitive Density



*$p <$ 10 (one-tailed test)
**$p <$ 05 (one-tailed test)
***$p <$ 01 (one-tailed test)
Notes We report only significant slope coefficients (Aiken and West 1991)

venience substitutes for satisfaction. Customers who perceive high convenience appear to exhibit inertia; as a result, they repurchase more, but satisfaction has no marginal effect. Customers who perceive low convenience in the strong-satiation category repurchase less on average, but they repurchase more as their satisfaction increases ($\beta = .12, p < .01$).

The negative ($\beta = -.36, p < .10$) satiation × competitive density interaction and the positive ($\beta = .04, p < .10$) satisfaction × competitive density interaction collectively suggest that the relationship between satisfaction and repurchase spending is significantly different depending on the purchase category and the competitive nature of the marketplace. Because the results for repurchase spending are marginally significant, we gain further insight by considering the significantly negative ($\beta = -.32, p < .05$) satiation × competitive density interaction in the repurchase visit model. As we depict in Figure 2, Panel F, competitive density has a complementary independent effect ($\beta = .05, p < .05$) on repurchase in the weak-satiation category and no effect on repurchase in the strong-satiation category. This finding is consistent with the idea that competitive density creates synergies for comparison shopping and builds customer traffic in weak-satiation purchase categories (Miller, Reardon, and McCorkle 1999).

Discussion

Despite widespread recognition that customer behavior is subject to ongoing contingencies, there is limited conceptual or empirical research that systematically addresses moderating influences on repurchase behavior. Prior research has conceptualized moderating influences as generalizable relationships. Empirical analyses have sometimes uncovered minor differences using different dependent variables (e.g., Magi 2003; Seiders et al. 2005; Verhoef 2003), but systematic examinations of differences across purchase categories are rare. Yet a review of the extant literature indicates that systematic differences exist (see Table 1), which underscores the need to enrich conceptualizations of moderating influences to better understand when satisfaction exerts a more or less positive influence on repurchase.

Our study makes three concrete contributions that enhance that understanding. First, we clearly explicate two types of moderating influences. Substitute interactions attenuate the positive effect of satisfaction on repurchase. Complementary interactions enhance the positive effect of satisfaction on repurchase. Complementary variables can also exert positive independent effects on repurchase. These three types of effects help categorize and explain prior empirical results, and they offer a promising foundation for understanding and predicting moderating influences in further research.

Second, we incorporate satiation and inertia theories to propose that customer, relational, and marketplace characteristics complement satisfaction in weak-satiation purchase categories and substitute for satisfaction in strong-satiation purchase categories. As we discuss in greater detail subsequently, this theoretical lens can be applied to identify outcome measurement approaches that are more likely to uncover complementary or substitute effects. The resultant insights can help researchers understand and interpret moderating influences, and they can help managers understand which marketing initiatives will be most effective.

Third, our empirical results offer substantive insights for allocating resources to satisfaction and to complementary or substitute initiatives. Because customer, relational, and marketplace characteristics complement satisfaction in weak-satiation purchase categories, firms can benefit from simultaneous investments in customer satisfaction and marketing initiatives that complement satisfaction. Because moderating influences substitute for satisfaction in strong-satiation purchase categories, firms likely benefit from investments in customer satisfaction or substitute initiatives, but not from both.

Given the difficulty to uncover moderating effects (e.g., Aguinis 1995; Aiken and West 1991), the overall level of support for our propositions is remarkable. In the weak-satiation purchase category, the results support complementary independent or moderating effects for all six characteristics; in the strong-satiation purchase category, the results support substitute interaction effects for four of the six characteristics. In the following sections, we examine the research and managerial implications.

Research Implications

Researchers frequently recommend that key relationships be investigated across different contexts to support the generalizability of findings or uncover important cross-context differences. The assumption is that differences are driven by underlying factors such as customer switching costs, frequency of purchase, long-term contracts, industry competitiveness, functional versus utilitarian benefits, and the seller's expert power (Bolton and Lemon 1999; De Wulf, Odekerken-Schroder, and Iacobucci 2001; Inman 2001; Wakefield and Inman 2003). Although many such factors are identified in the literature, there is a paucity of empirically validated frameworks that can be used to conceptualize differences across contexts. Our conceptual framework and empirical findings—from two prominent and diverse purchase categories—provide a starting point for a systematic assessment of moderating influences on the relationship between satisfaction and repurchase. We now extend our framework and findings to propose implications for two related and potentially confounding factors: (1) the business-to-business (B2B) versus the business-to-consumer (B2C) context and (2) dependent variable measurement.

B2B versus B2C context. In an attempt to be complete, the review of prior empirical results in Table 1 includes studies in both B2B and B2C contexts. This review indicates that complementary and substitute effects occur in both contexts, but it is not clear whether satiation is an appropriate theory to explain moderating effects in a B2B context. Does insatiability occur in a business context? If input quality is sufficient to drive demand for a supplier's products or even if the firm's managers believe that input quality drives demand, the answer could be maybe. For example, the concept of insatiability could explain the complementary interaction effect for service quality on a firm's computing support service upgrade decision (Bolton, Lemon, and Verhoef 2008, Table 1)

Insatiability does not explain the finding that account management tenure exerts a complementary interaction effect on share of customer purchases (Bowman and Narayandas 2004) This finding implies that noneconomic relational factors might enhance preference and purchase decisions beyond the main effect of satisfaction It would be worthwhile to explore whether, in a B2B context, these relational factors operate at an interorganizational level or at an interpersonal level In other words, are these relational effects attributable to complementary organizational benefits or to complementary benefits to the individual salesperson and buyer?

Inertia can explain the substitute results reported in B2B contexts in Table 1 For example, Bowman and Narayandas (2004) argue that larger firms with greater slack are less likely to search for alternative suppliers and more likely to repurchase from current suppliers They also find that the lack of a satisfactory competitor substitutes for satisfaction and increases the likelihood of repurchasing from the focal supplier Van Doorn and Verhoef (2008) find that the absence of a negative critical incident substitutes for satisfaction and leads to inertia

In summary, although our theory is developed in a B2C context, there are indications that some aspects might extend to B2B contexts with modification Further B2B research could explore whether complementary or substitute effects are more likely depending on supplier or customer characteristics, for example, in terms of importance or criticality for success

Dependent variable measurement Our theoretical development identifies insatiability as a facilitating condition for complementary effects and satiation as a facilitating condition for substitute effects We extend these insights to propose that measurement of repurchase can influence the likelihood of detecting complements and substitutes The potential effects of measurement on moderated regression results are well documented in the literature (e g , Aguinis 1995) We focus on the effect of range restrictions in the measurement of repurchase

The detection of complementary effects depends on capturing substantially higher repurchase behavior by insatiable customers Consider that repurchase visits and spending in the weak-satiation, fashion apparel context are positively skewed, much more so than in the strong-satiation, auto service context (see Table A2 in the Appendix) The average fashion apparel customer spent approximately $327 per year, the customer at two standard deviations above the mean spent approximately $2,485 The positive skew to the repurchase measure enhances the likelihood of detecting complementary interaction and main effects (see Figure 1, Panel B)

Contrast this measure of repurchase spending with measures of future repurchase or recommendation intentions we report in Table 1 These measures used five-point (Garbarino and Johnson 1999, Seiders et al 2005) or ten-point (Agustin and Singh 2005, Jones, Mothersbaugh, and Beatty 2000, Mittal, Kumar, and Tsiros 1999) intentions scales For the three studies that reported means and standard deviations, the dependent variable appears to be negatively skewed so that the range of the dependent variable does not include a value two standard deviations above the mean This range restriction attenuates the likelihood of discovering complementary effects even if they exist in the population of interest

A range restriction in the dependent variable also enhances the likelihood of uncovering substitute effects This occurs because the range restriction creates a measurement ceiling effect that is indistinguishable from the ceiling effect created by satiation (see Figure 1, Panel A) Thus, range restriction in the dependent variable could explain why four of the five studies that used intentions scales for the dependent variable found substitute effects This includes Seiders and colleagues' (2005) finding that involvement complements satisfaction when the dependent variable is repurchase visits and substitutes for satisfaction when the dependent variable is repurchase intentions (see Table 1)

Agustin and Singh's (2005) study is the only one to find complementary effects when using intentions as the dependent variable Three features of this study are worth noting First, the two contexts examined (retail clothing and airline service) are both weak-satiation contexts, in which complementary effects would be expected Second, the authors use three items with ten-point scales to measure intentions, which creates less range restriction than using three-item, five-point scales or a single-item, ten-point scale Third, it appears that one of the intentions items ("spend more than 50% of budget with the focal provider") was designed to decrease the number of maximum-point responses that lead to negative skew Collectively, this suggests that using multiple items with more response categories that elicit strong behavioral intentions can mitigate concerns with respect to range restrictions in the dependent variable

Intentions scales are not the only dependent measures that create range restrictions For example, the dependent variable in many studies is repurchase likelihood or share of wallet, in which the upper range is defined as equal to 1 These measures do not distinguish between a customer who spends lavishly at a single store and a customer who spends smaller amounts at a single store, behavioral differences that drive complementary effects Thus, this type of range restriction on the dependent variable can also diminish the likelihood of uncovering complementary effects or increase the likelihood of finding substitute effects

Our goal is not to promote one approach to measurement over another, rather, we want to promote a better understanding of how repurchase measurement might affect findings for moderating influences Researchers should recognize that any type of range restriction on the dependent measure decreases the likelihood of uncovering complements and increases the likelihood of finding substitutes This implies that the use of range-restricted dependent measures provides a strong test for complementary effects and a weak test for substitute effects and that the use of unrestricted dependent measures provides an appropriate test for complementary effects and a strong test for substitute effects, an inference that informs our results Using unrestricted dependent measures, we find 100% support for expected complementary effects but only 67% support (four out of six) for expected substitute effects.

Managerial Implications

Companies across a wide range of industries resolutely focus on customer satisfaction as a way to achieve strategic and financial objectives. Despite this emphasis, evidence indicates that satisfaction may have no effect on customer repurchase in some scenarios. This phenomenon is managerially important because it has direct implications for whether to invest resources in initiatives designed to enhance customer satisfaction, in initiatives designed to increase repurchase without increasing satisfaction, or in both types of initiatives simultaneously.

To date, marketers have not considered satiation's role in determining customer repurchase or the implications for firm strategies in driving repurchase. Our results demonstrate that satiation can constrain repurchase and, by extension, mitigate the success of a competitive strategy. These findings offer managers a practical path to assessing when investing in customer satisfaction initiatives may be more or less productive. The first step is to identify the role of satiation across various purchase categories, and the second step is to understand the impact of satiation on relevant factors that moderate the effects of satisfaction.

In weak-satiation purchase categories, such as fashion apparel, fine-dining restaurants, leisure travel, and entertainment, managers can take a multifaceted approach to their marketing investments. Simultaneously investing in customer satisfaction initiatives and leveraging customer, relational, and marketplace characteristics can create complementary effects that increase both the size and the share of the customer's wallet. Specifically, a comprehensive strategy to increase repurchase may involve (1) delighting customers with hedonic benefits, (2) targeting high-income and high-involvement customers through innovation, (3) investing in multifaceted relationship-building programs, and (4) reducing barriers to repurchase through increased convenience.

Consider how fashion apparel retailers such as Brooks Brothers or J. Crew implement such a broad-based strategy. They strive to delight customers by enhancing hedonic product attributes, such as merchandise styles and colors (Chitturi, Raghunathan, and Mahajan 2008). They engage in direct marketing campaigns aimed at affluent customers, train and motivate sales associates and tailors to deliver delightful in-store experiences, offer rewards in the form of gift cards to active members of their loyalty programs, and continuously seek to improve locational, multichannel, and product return convenience.

Many initiatives in hedonic, weak-satiation categories are designed not only to target highly involved customers but also to increase customers' involvement levels, which illustrates how managers can leverage a particular characteristic. For example, designers enhance excitement and involvement with fashion week activities and celebrity models, and boutique salespeople enhance involvement with personal telephone calls to announce the perfect, latest arrival. These initiatives are effective if the positive influence of satisfaction increases as involvement increases (Figure 2, Panel A). They are especially effective when customers' desires and wallets are unconstrained.

In contrast, managers in strong-satiation purchase categories might want to avoid initiatives that increase customer involvement because the lack of involvement can lead to inertia and higher repurchase among moderately satisfied customers (Figure 2, Panel A). Because of the prominence of substitute effects, managers in strong-satiation industries should carefully assess the cost-effectiveness of marketing resource allocations and focus on maximizing the share rather than the size of the customer's wallet. This could take the form of relational efforts designed to encourage inertia among current customers or promotional initiatives designed to break customers' inertia toward a competitor.

The optimal strategy in strong-satiation categories may be to maintain moderate levels of satisfaction, combining those efforts with an assortment of substitute initiatives that increase customer repurchase. The ideal emphasis on satisfaction versus substitute initiatives depends on the strength of the substitute effects and a cost–benefit analysis for each initiative. Casual observation suggests that many automobile maintenance and dry-cleaning service providers implement a balanced allocation strategy. They provide moderate levels of customer satisfaction, target low-involvement and moderate- to high-income customers with personalized or geographically segmented communications, and rely on locational convenience or pickup and delivery services to drive repurchase. They follow these approaches rather than trying to further elevate customer satisfaction through activities such as increasing service intensity, atmospherics, or customization.

In strong-satiation industries in which economies of scale and scope exist, companies can build a cost advantage and market share at the expense of individual customer profitability. This strategy invests in relatively high levels of customer satisfaction and an assortment of initiatives that lure customers away from competitors and promote repurchase by current customers. Target successfully implemented this strategy in a range of strong-satiation purchase categories, providing higher satisfaction than its competitors while also offering assortment convenience to drive repeat purchase behavior. Best Buy invested substantially in its Geek Squad installation and repair service, which offered customers convenience, value, and an established brand. The Geek Squad gained share at the expense of local vendors and built operating and marketing economies by leveraging its base in Best Buy stores.

Limitations and Conclusion

We recognize that our study has several limitations. For example, our comparative assessment of strong- and weak-satiation purchase categories focuses on only one example of each. Further research should examine and compare results in additional purchase categories. Our research focuses on six customer, relational, and marketplace moderators, but other research suggests additional moderators (see Table 1). Finally, because we focus on repurchase visits and spending by existing customers, we do not explicitly consider important outcomes such as customer retention or defection

Despite these limitations, three important takeaways emerge First, further research should make theoretical and empirical distinctions between complementary and substitute effects This common language facilitates comparison and reconciliation of findings across different contexts, and the managerial implications are direct Second, empirical replication across contexts helps us understand why different findings emerge in different contexts Although precise replication across contexts is difficult, controlling ancillary factors such as timing, measurement, and sampling enables us to isolate the role of context Our interpretation of the underlying theoretical mechanisms at work might come into question, but it is difficult to question our empirical findings that the moderating influences of customer, relational, and marketplace characteristics vary systematically across the two purchase categories Third, we should recognize the role of measurement in influencing the findings because such recognition helps us understand and reconcile why different findings emerge Our goal is to better understand the moderating influences on repurchase so that we can develop actionable frameworks for researchers, managers, and students We encourage additional research that helps us realize that goal

Appendix

Empirical Model, Measurement Details, and Descriptive Statistics

We used restricted maximum likelihood estimation to analyze the hierarchical linear model, which was specified as follows

$$
\begin{aligned}
Y_{ij} = {} & \alpha_0 + \alpha_1 \text{lag}Y_{ij} + \alpha_2 \lambda_{ij} + \alpha_3 SI_j + \alpha_4 SI_j \times \lambda_{ij} \\
& + \beta_1 Sat_{ij} + \beta_2 Inv_{ij} + \beta_3 HI_{ij} + \beta_4 RA_{ij} \\
& + \beta_5 RBP_{ij} + \beta_6 Conv_{ij} + \beta_7 CD_{ij} \\
& + \gamma_1 Sat_{ij} \times SI_j + \gamma_2 Sat_{ij} \times Inv_{ij} + \gamma_3 Sat_{ij} \times HI_{ij} \\
& + \gamma_4 Sat_{ij} \times RA_{ij} + \gamma_5 Sat_{ij} \times RBP_{ij} + \gamma_6 Sat_{ij} \times Conv_{ij} \\
& + \gamma_7 Sat_{ij} \times CD_{ij} + \gamma_8 SI_j \times Inv_{ij} + \gamma_9 SI_j \times HI_{ij} + \gamma_{10} SI_j \times RA_{ij} \\
& + \gamma_{11} SI_j \times RBP_{ij} + \gamma_{12} SI_j \times Conv_{ij} + \gamma_{13} SI_j \times CD_{ij} \\
& + \delta_1 Sat_{ij} \times SI_j \times Inv_{ij} + \delta_2 Sat_{ij} \times SI_j \times HI_{ij} \\
& + \delta_3 Sat_{ij} \times SI_j \times RA_{ij} + \delta_4 Sat_{ij} \times SI_j \times RBP_{ij} \\
& + \delta_5 Sat_{ij} \times SI_j \times Conv_{ij} + \delta_6 Sat_{ij} \times SI_j \times CD_{ij} + e_{ij},
\end{aligned}
$$

where

Y_{ij} = objective repurchase activity for customer i in purchase category j (as represented by the partner firm),
$\text{lag}Y_{ij}$ = lagged dependent variable,
λ_{ij} = selection control factor for customer i in purchase category j,
SI_j = satiation index for purchase category j,
Sat_{ij} = satisfaction for customer i in purchase category j,
Inv_{ij} = involvement for customer i in purchase category j,
HI_{ij} = median household income for customer i in purchase category j,
RA_{ij} = relationship age for customer i in purchase category j,
RBP_{ij} = relationship-building program for customer i in purchase category j,
$Conv_{ij}$ = convenience for customer i in purchase category j, and
CD_{ij} = competitive density for customer i in purchase category j

We describe the measurement for each variable in Table A1 We provide reliability scores, summary statistics, and correlation matrices in Table A2

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TABLE A1
Measurement Details for Each Variable

	Weak-Satiation Category (Fashion Apparel)	Strong-Satiation Category (Auto Service)
Dependent Variables		
Repurchase spending	Repurchase spending dollars during the year following the survey	
Repurchase visits	Number of repurchase visits during the year following the survey	
Independent Variables		
Selection control factor	$\frac{\phi\left[\text{Probability}\left(\text{Survey Response}\right) = \text{Yes}\right]}{\Phi\left[\text{Probability}\left(\text{Survey Response}\right) = \text{Yes}\right]}$ ϕ = probability density function, Φ = cumulative distribution function	
Satiation index	$\frac{\left[\text{\% of HI dedicated to purchase category } j \text{ (Decile 7)} - \text{\% of HI dedicated to purchase category } j \text{ (Decile 1)}\right]}{\text{\% of HI dedicated to purchase category } j \text{ (Decile 7)}}$	
Satisfaction	Three survey items adapted from Voss, Parasuraman, and Grewal (1998) •"I am pleased with the overall service at SP" •"Shopping at SP is a delightful experience" •"I am completely satisfied with the SP shopping experience"	Three survey items adapted from Voss, Parasuraman, and Grewal (1998) •"I am pleased with the overall service at SP" •"Taking my car in for service at SP is a pleasant experience" •"I am completely satisfied with the service SP provides"
Involvement	Three survey items adapted from Beatty and Talpade (1994) •"I have a strong personal interest in stores like SP" •"The kinds of products SP sells are important to me" •"Stores like SP are very important to me"	Three survey items adapted from Beatty and Talpade (1994) •"I have a personal interest in auto maintenance and repairs" •"The types of auto services performed at SP are interesting to me" •"I don't have any interest in knowing about auto maintenance and repairs" (reverse-scaled item dropped because of low correlations)
Household income	Median household income reported in the 2000 census for the respondent's zip code	Median household income reported in the 2000 census for the respondent's zip code
Relationship age	Single survey item •"How long have you been a SP customer?"	Single survey item •"How long have you been a SP customer?"
Relationship-building program	Dichotomous variable indicating customers who had opted in to receive marketing contacts through the e-mail program	Number of outgoing marketing contacts directed toward each customer
Convenience	Five survey items adapted from Seiders and colleagues (2007) •"I can easily determine prior to shopping whether SP will offer what I need" •"I am able to get to SP quickly and easily" •"The merchandise I want at SP can be located quickly" •"SP makes it easy for me to conclude my transaction" •"It is easy to take care of returns and exchanges at SP"	Five survey items adapted from Seiders and colleagues (2007) •"It is quick and easy to find out if SP provides the auto service I need" •"I am able to get to SP's location quickly and easily" •"From the time I take my car in to the time I pay, the service at SP is quick and easy" •"When the service on my car is finished, SP makes it simple and fast for me to pay" •"It is easy and quick to take care of any after-service issues at SP"
Competitive density	Number of competitors in each respondent's zip code for women's clothing and accessories (NAICS codes 448120 and 442299)	Number of competitors in each respondent's zip code for auto dealerships and repair (NAICS codes 441110, 441120, and 811111-98)

Notes HI = household income SP = service provider

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TABLE A2
Descriptive Statistics and Correlation Matrices

	Repurchase Visits	Repurchase Spending	Satisfaction	Involvement	Household Income	Relationship Age	Relationship-Building Program	Convenience	Competitive Density	Selection Control Factor	*M*	*SD*
Repurchase visits	N A	69	18	02	11	06	40	18	– 01	– 60	5 33	5 15
Repurchase spending	74	N A	05	00	09	04	27	08	– 01	– 36	366 80	560 36
Satisfaction	07	07	89/ 94	23	– 04	08	11	69	00	– 14	4 29	87
Involvement	10	12	27	86/ 66	– 05	14	04	37	01	– 01	3 74	83
Household income	01	– 00	– 06	– 06	N A	– 01	14	– 06	– 01	– 09	63,016	18,286
Relationship age	03	00	01	10	06	N A	07	12	– 01	– 06	8 05	8 22
Relationship-building program	28	25	– 04	10	– 09	– 16	N A	10	– 01	– 32	13 45	6 69
Convenience	11	10	66	29	02	10	03	N A	02	– 12	4 35	0 62
Competitive density	– 01	– 03	– 01	– 03	03	02	– 02	00	N A	01	4 38	3 87
Selection control factor	– 18	– 27	– 01	– 03	03	13	– 25	02	07	N A	1 03	15
M	4 12	326 81	4 34	4 03	58,733	3 13	29	3 89	7 42	1 13		
SD	9 59	1079 00	72	73	20,195	2 43	45	54	10 35	08		

Notes Correlations for the fashion apparel context appear below the diagonal, and correlations for the automobile service context appear above the diagonal Correlations greater than | 06| are significant at $p <$ 05 Reliability estimates are on the diagonal for reflective scales N A = not applicable

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Resistance to Brand Switching When a Radically New Brand Is Introduced: A Social Identity Theory Perspective

There has been little research on how market disruptions affect customer–brand relationships and how firms can sustain brand loyalty when disruptions occur. Drawing from social identity theory and the brand loyalty literature, the authors propose a conceptual framework to examine these issues in a specific market disruption, namely, the introduction of a radically new brand. The framework focuses on the time-varying effects of customers' identification with and perceived value of the incumbent relative to the new brand on switching behavior. The authors divert from the conventional economic perspective of treating brand switching as functional utility maximization to propose that brand switching can also result from customers' social mobility between brand identities. The results from longitudinal data of 679 customers during the launch of the iPhone in Spain show that both relative customer–brand identification and relative perceived value of the incumbent inhibit switching behavior, but their effects vary over time. Relative customer–brand identification with the incumbent apparently exerts a stronger longitudinal restraint on switching behavior than relative perceived value of the incumbent. The study has important strategic implications for devising customer relationship strategies and brand investment.

Keywords: customer–brand identification, perceived value, switching, branding, relationship marketing, loyalty, social identity theory

Building a strong, healthy brand is instrumental in creating a sustainable competitive advantage (Aaker 1995; Bhattacharya and Lodish 2000). The loyalty literature suggests that perceived value is an important predictor of brand loyalty. Amid the lamentation that customer satisfaction is not always enough to predict brand loyalty (Jones and Sasser 1995; Oliver 1999), recent research has posited that perceived value as a construct at a higher level of abstraction than satisfaction may be a better substitute (Bolton and Drew 1991; Zeithaml 1988). This is because perceived value captures customers' overall assessment of "the utility of a product based on perceptions of what is received and what is given" (Zeithaml 1988, p. 14). Although the existing literature provides rich and useful insight into customer–brand relationships, two limitations warrant further investigation.

First, sustainability of brand loyalty predictors refers to standing the test of both time and market disruptions. However, the brand loyalty literature has mainly focused on how brands perform under normal market conditions (for a review, see Keller and Lehmann 2006). Yet as the business environment grows more complex and globalized, market disruptions become more prevalent. From the customers' perspectives to marketing relationships (e.g., Fournier 1998; Stern, Thompson, and Arnould 1998), we define market disruptions as major events occurring in the market that threaten customer–brand relationships. These events are not at the individual level (e.g., individual service failures). Examples include aggressive competitors' sales promotion, industry crises (e.g., Salmonella in peanut butter), product recalls (e.g., Mattel's 2007 toy recall, Toyota's 2010 recall), negative publicity (e.g., rumor), and disruptive innovations by competitors (e.g., Apple's iPhone launch). These events can influence the relative standing of brands in the eyes of customers. However, there has been surprisingly little research on the longitudinal effects of perceived value on brand loyalty in disruptive times.

Second, if perceived value is conceptualized and operationalized as functional utilitarian value, as is prevalent in the literature, it does not capture other nonutilitarian factors, such

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as sociopsychological benefits, that might motivate customers to continue buying what they buy (e.g., Bagozzi 1975; Gardner and Levy 1955; Holbrook and Corfman 1985; Richins 1994; Sheth, Newman, and Gross 1991; Solomon 1983; Sweeney and Soutar 2001). Meanwhile, the branding literature reveals that brands can provide self-definitional benefits beyond utilitarian benefits (e.g., Aaker 1995; Aaker 1999; Escalas and Bettman 2005; Fournier 1998; Keller 1993; Keller and Lehmann 2006; Park, MacInnis, and Priester 2009; Stern 2006). The multifaceted nature of customer–brand relationships raises two important questions. On the one hand, it challenges the prevalent assumption that customers stay loyal or switch brands only to maximize functional utility. On the other hand, it raises the question whether there is an underlying customer–brand relationship mechanism that drives brand loyalty in the face of market disruptions.

Research on customer–company identification, which is based on social identity (Tajfel and Turner 1979) and identity (Stryker 1968) theories, suggests that "in addition to the array of typically utilitarian values . . . that accrue to consumers from their relationship with a company," customer–company identification functions as "a higher-order and thus far unarticulated source of company-based value" (Bhattacharya and Sen 2003, p. 77). Defined as the extent to which customers perceive themselves as sharing the same self-definitional attributes with the company, customer–company identification forms the "primary psychological substrate for the kind of deep, committed, and meaningful relationships that marketers are increasingly seeking to build with their customers" (Bhattacharya and Sen 2003, p. 76). Although recent marketing research has begun to apply this framework to brands (e.g., Donavan, Janda, and Suh 2006), longitudinal examination of this phenomenon is almost nonexistent.

In light of this discussion, this study has three purposes. First, we build on social identity theory (Tajfel and Turner 1979) and the customer–company identification framework to formally propose the concept of customer–brand identification (CBI). We define CBI as a customer's psychological state of perceiving, feeling, and valuing his or her belongingness with a brand. In line with Ashforth and Mael's (1989) work, we use "belongingness" to refer to psychological oneness with a social entity (e.g., a firm, a brand) stemming from an actual membership (e.g., an employee) or a symbolic membership (e.g., a current or potential customer of a brand). Second, we combine social identity theory (Tajfel and Turner 1979) and the brand loyalty literature to propose a conceptual framework of switching behavior as both social mobility of customers between brands they identify with and functional utility maximization. We derive hypotheses about the time-varying effects of CBI and perceived value of incumbent brands relative to those of the new brand in predicting switching. We refer to these variables as "relative CBI" and "relative perceived value," defined as the extent to which a customer believes that a focal brand's identity has higher self-relevance and that its utilitarian value exceeds that of another alternative in the same product category, respectively. Third, we test our framework in the context of a specific kind of market disruption, namely, the introduction of a radically new brand in a competitive market.

Using data from 679 customers over ten months during the initial launch of the iPhone in Spain, we found that both relative CBI and relative perceived value of an incumbent in relation to the new brand inhibit switching behavior, but their effects vary over time. Longitudinally, relative CBI of the incumbent appears to exert a stronger restraint on switching behavior than relative perceived value of the incumbent.

This study contributes to the literature on customer loyalty and relationship marketing in several ways. First, we divert from the conventional economic perspective of treating brand switching as functional utility maximization to propose that brand switching can also be a manifestation of social mobility between brand identities. Second, this study is among the first to shed light on how market disruptions affect customer–brand relationships and how brand loyalty may be sustained when disruptions occur. In so doing, our study provides the first empirical evidence for the time-varying effects of relative CBI and relative perceived value and their unique roles during a market disruption. The empirical findings and theoretical implications of our study can be extended to research on social identification in areas outside the marketing field. Managerially, this study provides important strategic guidelines for both brand and customer relationship managers on how to devise customer relationship strategies and allocate brand investments to achieve a sustainable competitive advantage.

We organize this study as follows. We first discuss the social identity theory approach to customer–brand relationships. This is followed by our theorization on brand-switching behavior during a specific kind of market disruptions, the introduction of a radically new brand. Then, we present the research hypotheses, describe the empirical context, and report the empirical results. We conclude with a general discussion of implications and directions for further research.

Social Identity Approach to Customer–Brand Relationships

Following the long tradition of viewing possessions as the extended self (Belk 1988; Gardner and Levy 1955), Bhattacharya and Sen (2003) draw from social identity theory (Tajfel and Turner 1979) to propose that customers may develop customer–company identification, or customers' belief that they share the same self-definitional attributes with a company. We extend this logic to a more microlevel research domain—namely, brands. This extension is possible because, as concrete actualizations of the otherwise abstract companies, brands can represent self-relevant social categories with which customers identify (Belk 1988; Fournier 1998) and because meaning can be transferred between brands and the self (McCracken 1988). Social identity theory is appropriate for examining customer–brand relationships because identification has important implications for maintaining relationships despite relationship disruptions. This emphasis on the largely neglected enduring effects of identification complements the foci of two important literature streams: the longitudinal perspective (e.g., customer lifetime value) in relationship marketing and the competitive dynamics and sociopsychological benefits in brand equity research

Social Identity Theory, Identity Theory, and Their Marketing Applications

Social identity theory (Tajfel and Turner 1979) posits that people define their self-concepts by their connections with social groups or organizations Using social identity theory, management researchers developed the concept of organizational identification (Ashforth and Mael 1989), which is the extent to which organizational members define themselves in terms of oneness with the organization Marketing research based on this theory demonstrates that members of brand communities engage in collective behavior, such as rituals, to extol the virtues of their beloved brands and to help other brand identifiers (Bagozzi and Dholakia 2006, McAlexander, Schouten, and Koenig 2002, Muniz and O'Guinn 2001) Research on brand communities explicitly focuses on the interaction between customers who identify with the same brand or with competing brands Thus, the focus is on the collective self or the public self—that is, the self that is embedded in a collective (a brand community) or society as a whole (Triandis 1989)

At a micro level, identity theory (Stryker 1968) focuses on the social roles of people in various social settings For example, a student can simultaneously occupy the role of a son or daughter and a member of a scholar society Identity represents the subjective component of a role, and identities are organized hierarchically Identities that are high on the hierarchy are more salient Marketing research based on identity theory focuses on how individual customers perceive a product as "me" or "not me" (Kleine, Kleine, and Allen 1995) and how they behave in agreement with the most salient identity (Arnett, German, and Hunt 2003, Bolton and Reed 2004, Oyserman 2009) Thus, identity theory is more concerned with individual behavior and the private self (Triandis 1989)

Although social identity theory and identity theory evolved in different fields (i e , social psychology and sociology, respectively), both theories are closely related to the self-concept literature, and both examine the connection between the self and social entities (Belk 1988, Sirgy 1982) These theories share several similar concepts that have been introduced into the marketing literature (e g , Bhattacharya and Sen 2003, Escalas and Bettman 2005, Oyserman 2009, Reed 2002) We draw from these two theories to conceptualize CBI In doing so, we regard a brand as a relationship partner that is important to (1) the private self, such that individual customers use the brand to define who they are, and (2) the social self, such that these customers consider themselves part of an in-group of customers who identify with the same brand

CBI: Definition and Dimensions

CBI definition Social identity theory (Tajfel 1982, p 2) posits that three components typically constitute the "identification" stage a cognitive component (i e , the sense of awareness of membership), an evaluative component (i e , the sense that this awareness is related to some value connotations), and an emotional component (i e , affective investment in the awareness and evaluations) Following this insight, we define CBI as a customer's psychological state of perceiving, feeling, and valuing his or her belongingness with a brand

Other research has conceptualized identification as purely cognitive, especially in early organizational identification research (for a review, see Ashforth, Harrison, and Corley 2008) However, self-related attitude is intimately associated with the emotions (Epstein 1980), and "emotion is a central aspect of many marketing relationships" (Bagozzi 1995, p 274) Multidimensional conceptualization of identification has recently been gaining acceptance in both applied psychology (Ashforth, Harrison, and Corley 2008) and marketing (Bagozzi and Dholakia 2006) This new development in the identification literature is in line with work on the affective and cognitive bases of attitude and the interaction between cognition and affect (e g , Fabrigar and Petty 1999)

CBI as a formative construct Affect and cognition can play different roles in attitude formation and change (Fabrigar and Petty 1999) Affect can also function independently from cognition (Zajonc and Markus 1982) Empirically, the organizational identification literature suggests that cognitive and affective aspects of identification have different behavioral consequences (Van Dick et al 2004) These findings suggest that the indicators of CBI dimensions define the constructs, that these items are not interchangeable, and that they have dissimilar nomological nets Mapping these onto the criteria for conceptualizing constructs as formative (Jarvis, MacKenzie, and Podsakoff 2003, p 203), we conceptualize CBI as a second-order formative construct, with three reflective first-order dimensions

Distinctions between CBI and existing concepts The concept of CBI goes beyond the acquisition of a product to a more experiential view of consumption that emphasizes the dynamic interactions between customers and their brands as valued relationship partners (Carù and Cova 2003, Holbrook and Corfman 1985, Mertz, He, and Vargo 2009, Solomon 1983) Table 1 summarizes how CBI differs from existing concepts Note that CBI differs from brand loyalty in that not all loyal customers who repurchase the same brand and do not switch to other brands actually identify with the brand In other words, customers may have a multifaceted relationship with a brand such that brand loyalty may be driven by functional value and high switching costs rather than identification with the brand It is this last distinction that motivates this research

Brand Switching When a Radically New Brand Is Introduced

This study focuses on how a specific type of market disruption—namely, the introduction of a radically new brand—affects customer–brand relationships In competitive markets, customers can choose from multiple brands As a result, they may (1) develop multiple identifications with multiple brands (e g , Bhattacharya, Rao, and Glynn 1995) and (2) perceive the utilitarian and psychological value of

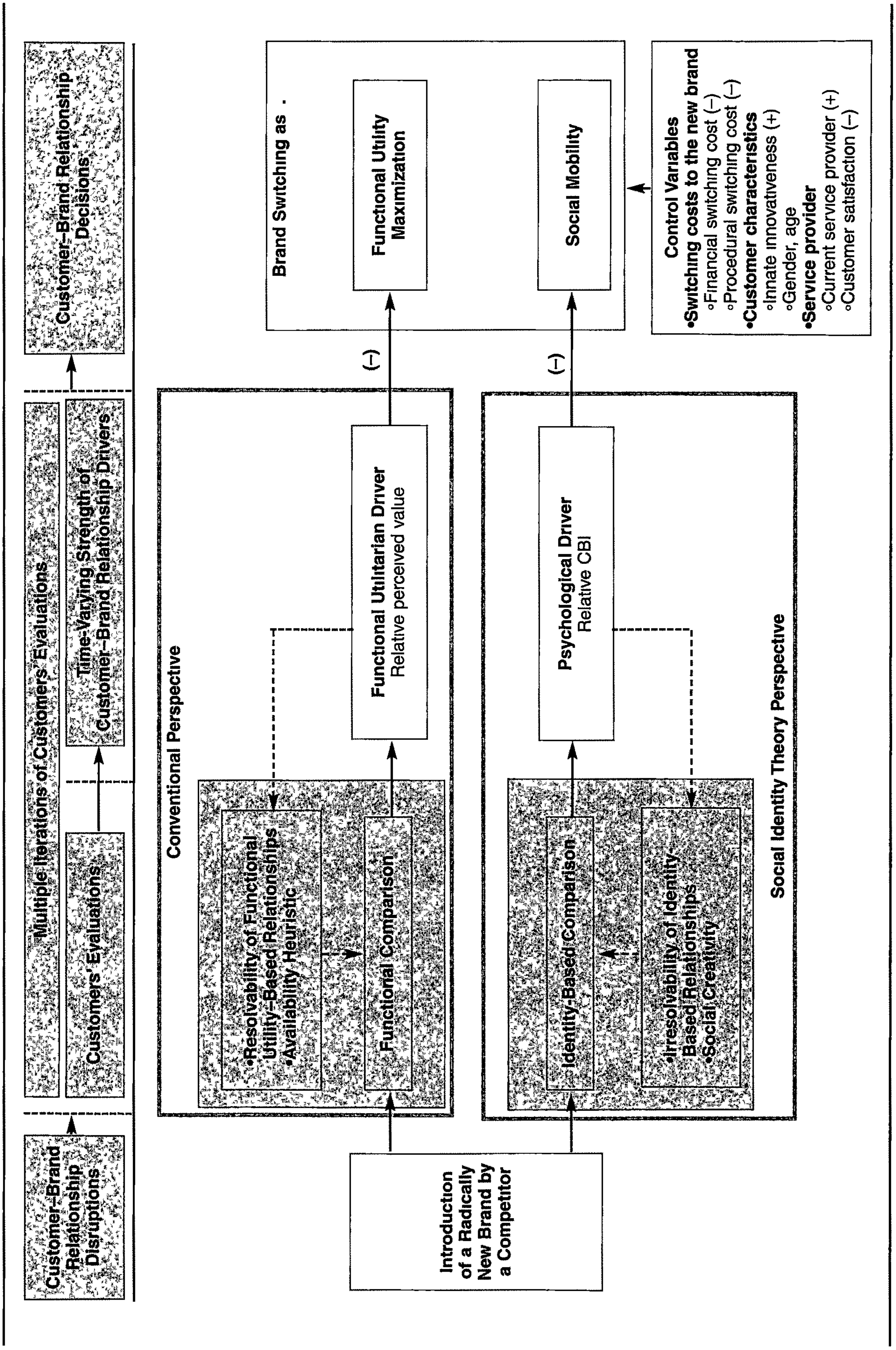
TABLE 1
Distinctions Between CBI and Existing Constructs

Constructs	Definition	CBI Distinctions
Brand commitment	•Brand commitment is the pledging or binding of a person to his or her brand choice within a product class (Lastovicka and Gardner 1977) Many authors treat brand commitment as synonymous with attitudinal loyalty (e g , Chaudhuri and Holbrook 2001)	•CBI has an evaluative component (e g , How do a customer and others think about the relationship the customer has with a brand"?) that brand commitment does not capture •More details about the conceptual and empirical distinctions between identification and commitment (especially affective commitment) are available in Ashforth, Harrison, and Corley (2008), Bergami and Bagozzi (2000), Brown and colleagues (2005), Meyer, Becker, and Van Dick (2006), and Van Knippenberg and Sleebos (2006)
Brand trust	•Brand trust is "the willingness of the average consumer to rely on the ability of the brand to perform its stated function" (Chaudhuri and Holbrook 2001, p 82)	•Brand trust does not capture self-definitional sharing Customers might trust a number of brands but not identify with all of them
Brand credibility	•Brand credibility is "the believability of the product information contained in a brand, which requires that consumers perceive the brand as having the ability (i e , expertise) and willingness (i e , trustworthiness) to deliver continuously what has been promised" (Erdem, Swait, and Valenzuela 2006, p 35)	•Brand credibility views brands as a promise-delivering media CBI treats brands as true relationship partners Brand credibility does not capture self-definitional sharing Brand credibility creates brand equity due to the signaling effect (Erdem, Swait, and Valenzuela 2006), while CBI creates brand equity through the customers' association with the brand identity
Brand affect	•Brand affect is "a brand's potential to elicit a positive emotional response in the average consumer as a result of its use" (Chaudhuri and Holbrook 2001, p 82)	•CBI induces "hot" affect (e g , Park, MacInnis, and Priester 2009, Thomson, MacInnis, and Park 2005), while brand affect can lie on a continuum from cold to hot Brand affect does not include a cognitive component Customers may identify with a brand without actual previous use (e g , luxury brands)
Brand equity	•Brand equity is the marketing effects or outcomes that accrue to a product with its brand name compared with those that would accrue if the same product did not have the brand name In Aaker's (1995) brand equity framework, brand equity consists of five dimensions brand loyalty, brand awareness, perceived quality, brand associations, and other proprietary brand assets	•Aaker (1995) emphasizes the importance of brand identity in building brand equity Brand identity reflects what a brand is CBI captures a customer's psychological state of being associated with the brand identity
Customer equity	•According to Rust, Zeithaml, and Lemon (2000), customer equity consists of value equity (the perceived ratio of what is received and what must be sacrificed), brand equity (the subjective appraisal of a customer's brand choice), and relationship equity (elements that link a customer to a brand or a company)	•CBI captures not only relationship equity and brand equity but also the evaluation of such relationship with the brand This evaluation, which is a metacognition (Wegener, Sawicki and Petty 2009), can come from the customers as well as the social groups who associate and/or dissociate with the brand
Brand loyalty	•Brand loyalty is "a deeply held commitment to rebuy or repatronize a preferred product/service consistently in the future, causing repetitive same-brand or same-brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behavior" (Oliver 1999, p 34) Most empirical research examines behavioral loyalty (e g , repurchase, willingness to pay more, word of mouth)	•Not all loyal customers identify with the brand CBI has an evaluative component (either individual or social) that brand loyalty does not fully capture CBI can induce behavior beyond repurchase, such as defending the brand as one's own self when it is slandered (Bhattacharya and Sen 2003) Customers may identify with a brand without actual previous use

the brand they use in relation to other brands in a comparative manner (e g , Dick and Basu 1994) This notion of relative CBI and perceived value is even more critical in disruptive times We propose that the introduction of a radically new brand causes customers of incumbent brands to reconsider their existing relationships with those brands along these two dimensions before deciding whether to switch

Figure 1 summarizes the conceptual framework and features two perspectives the conventional approach, which views switching as functional utility maximization as a result of functional comparison (upper half of Figure 1), and the social identity theory approach, which views switching as social mobility as a result of identity-based comparison (lower half of Figure 1)

FIGURE 1
Conceptual Framework


Customer–Brand Relationship Disruptions
Multiple Iterations of Customers' Evaluations
Customers' Evaluations
Time-Varying Strength of Customer–Brand Relationship Drivers
Customer–Brand Relationship Decisions
Introduction of a Radically New Brand by a Competitor
Conventional Perspective
•Resolvability of Functional Utility-Based Relationships
•Availability Heuristic
Functional Comparison
Functional Utilitarian Driver
Relative perceived value
(–)
Brand Switching as . . .
Functional Utility Maximization
Social Identity Theory Perspective
Identity-Based Comparison
•Irresolvability of Identity-Based Relationships
•Social Creativity
Psychological Driver
Relative CBI
(–)
Social Mobility
Control Variables
•Switching costs to the new brand
◦Financial switching cost (–)
◦Procedural switching cost (–)
•Customer characteristics
◦Innate innovativeness (+)
◦Gender, age
•Service provider
◦Current service provider (+)
◦Customer satisfaction (–)

Customer–Brand Relationship Decisions: Two Perspectives to Switching

Brand switching as functional utility maximization Economists view consumer choices as means to achieve maximization of functional utility (McFadden 1986) In addition, a common practice among marketing researchers is to model consumer brand switching as choices based on product attributes and marketing mix (see, e g , Guadagni and Little 1983, and many subsequent extensions) However, according to the original text on multiattribute utility theory (Lancaster 1966), consumer utility includes not only a brand's functional but also sociopsychological attributes Similarly, McFadden (1986, p 284) contends that it is necessary to incorporate psychometric data in choice models because these factors also shape the utility function Surprisingly, it is not until recently that research on choice models has revived the need to incorporate softer, non-product-related attributes, such as customers' attitudes and perceptions, into models of brand choice and brand switching (e g , Ashok, Dillon, and Yuan 2002, Swait and Erdem 2007) These researchers posit that these softer attributes also play an important role in predicting choice set formation, brand choice, and brand preference

Brand switching as social mobility In line with the recent development in choice modeling, social identity theory suggests that brand switching also serves sociopsychological purposes besides functional utility maximization (Rao, Davis, and Ward 2000, Tajfel and Turner 1979) This theory posits that people derive their identity from their affiliations with social groups They value such membership and distinguish themselves from those who did not share such affiliations, forming the in-group and the out-group When a social identity is threatened (i e , negatively perceived), in-group members will likely respond by resorting to three basic strategies social mobility, social creativity, and social change

Social mobility refers to a person's attempt to leave or dissociate him- or herself from the group Moving from a lower-status group to a higher-status one is an example Social creativity describes a person's attempt to "seek positive distinctiveness for the in-group by redefining or altering the elements of the comparative situation" (Tajfel and Turner 1979, p 43) For example, a business school that does not compare favorably with other schools in overall evaluation may seek out specific dimensions of comparison that grant it superiority over these other schools (Elsbach and Kramer 1996) Finally, social change refers to direct competition with the out-group to retrieve higher status

In the marketing context, social change can be initiated either by competitors or by customers who identify with a brand Market disruptions that are externally caused by competitors (e g , radically innovative brands) can be viewed as attempts to initiate social change between competitors to vie for customers' favor When a radically new brand is introduced, some customers may perceive the new brand as having a more attractive identity than the incumbent's identity On the customer side, brand identifiers sometimes proactively generate negative word of mouth about brands that they do not identify with, especially after they are exposed to comparative advertising

Building on Tajfel and Turner's (1979) theorization of social mobility, we propose that customers may switch to a new brand for self-enhancement purposes to maximize sociopsychological utility (e g , symbolic benefits) rather than functional utility (e g , functional benefits) In support for the social mobility argument, Rao, Davis, and Ward (2000) report evidence that firms migrate from the NASDAQ stock market to the New York Stock Exchange to preserve a positive identity In the marketing context, Stern, Thompson, and Arnould's (1998) narrative analysis of marketing relationships implies that customers may switch to a brand they used to dislike by revising their view of the brand's identity and reference group Research on cultural assimilation also reports that immigrants swap their cultural identities in consumption as they assimilate into the mainstream culture (e g , Oswald 1999) Similarly, Chaplin and John (2005) report that as children mature into adolescents, their self-concept becomes more sophisticated and so does their connections with brands

When the boundary between the in-group and the out-group is impermeable and changing group membership is not realistic, social mobility is not a viable strategy to cope with identity threats For example, people rarely change their political affiliation Social identity theory suggests that under such circumstances, people will engage in social creativity (Tajfel and Turner 1979) Tajfel and Turner (1979, p 43) posit that social creativity can take multiple forms, such as (1) comparing the in-group with the out-group on some new dimensions, (2) changing the values assigned to the attributes of the group such that previously negative comparisons are now cast in a positive light, and (3) avoiding using the high-status out-group as a comparative frame of reference In other words, social creativity is identity-based comparisons that have in-group biases, defined as a strong belief in the superiority of the group with which a person identifies and prejudice against the nonidentified group Brewer (1979) posits that such in-group biases are both cognitive and motivational because these biases motivate in-group members (e g , brand identifiers) to attend only to elements that the in-group will evaluate more positively than the out-group Next, we extend these ideas to our marketing research context

Drivers of Brand Switching When a Radically New Brand Is Introduced

Figure 1 shows that the introduction of a radically new brand disrupts customer–brand relationships with an incumbent because it represents an attractive alternative to the incumbent, in terms of either a brand identity or functional value In the choice between the new brand and existing ones, social identity theory places emphasis on identity-based comparison, while conventional economic and marketing theory focuses on the comparison of functional attributes We combine these two perspectives to propose that when a radically new brand is introduced, customers will engage in functional and identity-based comparisons on either functional value or sociopsychological value These two forms of comparison may enhance or impair perceived value and CBI of the incumbent relative to those of the new brand, respectively.

Relative perceived value. Research on brand loyalty has long recognized that customers' consideration set may well include multiple brands, and the ranking of one brand against another is inevitable. In addition, Holbrook and Corfman (1985) emphasize the notion of comparative in defining value. Following existing models of brand choice, we define "relative perceived value" as the extent to which the utilitarian value of the functional benefits of a branded offering exceeds those of another alternative in the same product category. As we allude to subsequently, the effect of relative perceived value on switching does not increase over time even after several iterations of functional comparison because of two reasons: resolvability and availability heuristic. Resolvability refers to whether customers believe they can change the situation (Slotegraaf and Inman 2004). Because functional utility is not bonded with the self-identity, it is easier for customers to resolve a relationship that is based on a brand's functional benefits. In social identity theory, this resolvability reflects the "permeability" between social groups. Availability heuristic refers to the tendency to estimate the frequency of an event, or the likelihood of its occurrence, by the ease with which relevant instances or associations come to mind (Tversky and Kahneman 1982). When customers experience difficulty in generating positive information about their choice, they may infer that the amount of positive information is rather limited and may reverse their attitude toward the chosen brand (Wanke, Bohner, and Jurkowitsch 1997). The upper half of the conceptual framework in Figure 1 captures these underlying processes. With its relevance to functional utility, relative perceived value influences switching behavior as functional utility maximization.

Relative CBI. Research in the nonprofit marketing literature suggests that "[i]dentification is not simply a bilateral relationship between a person and an organization, isolated from other organizations, but a process in a *competitive* arena" (Bhattacharya, Rao, and Glynn 1995, p. 54, emphasis added). Surprisingly, empirical marketing research that addresses this issue is meager (Arnett, German, and Hunt 2003). In the context of brands, we draw from Stryker's (1968) work to define relative CBI as the extent to which a customer perceives a focal brand's identity as having higher self-relevance than the identity of another brand in the same product category. When a customer identifies more strongly with the focal brand than with the competing brand, relative CBI of the focal brand is strong, and the focal brand's identity is more salient.[1]

Social identity and identity theories posit that though a person may identify with multiple social entities, only the most salient identity will form the basis for action (Stryker 1968). In competitive markets, this notion of salience is highly relevant because competition fosters social comparison between brands and their identities. Identity-related market disruptions, such as the launch of a radically new brand, may threaten and thus activate existing brand identities that would otherwise remain dormant in normal market conditions. As we explain in detail subsequently, the effect of the incumbent's relative CBI on switching grows stronger over time after several iterations of identity-based comparison because of two reasons: irresolvability and social creativity. In the marketing context, because identification with a brand weaves the brand identity into the fabrics of the self-identity, it is not easy for customers to change their association with a brand identity. Because of the irresolvability (Slotegraaf and Inman 2004) of identity-based relationships with a brand, customers are more likely to endure an existing brand identity and resort to social creativity. In social identity theory, this irresolvability is equivalent to the "impermeability" between social groups. Because social creativity strategies are biased in favor of the incumbent brand's identity, social creativity will help these customers regain a more positive identity than the radically new brand's identity, and their need for migrating to the new brand to satisfy the need for self-enhancement will dissipate. The lower half of the conceptual framework in Figure 1 captures these underlying processes. With its relevance to the self and self-identity, relative CBI influences switching behavior as social mobility.

Research Hypotheses

In this section, we derive formal hypotheses about customers' resistance to brand switching when a radically new brand is introduced. We control for other variables that the literature suggests are predictive of switching behavior, such as customer characteristics, satisfaction with the service provider, and switching costs (see Figure 1).

Cross-Sectional Effects

Relative perceived value and brand switching. Perceived value represents a utilitarian driver of customer–brand relationships. In general, previous research has suggested that perceived value and repurchase intention are positively related (Dodds, Monroe, and Grewal 1991). However, because a functional utility–based relationship does not reflect a high level of internalization of brand values into the self, it may be more susceptible to change. Previous research has suggested that when customers are in a resolvable situation in which they believe they can change the situation, they are likely to rectify the situation by engaging in actions rather than enduring it (Slotegraaf and Inman 2004) We propose that the introduction of a radically new brand motivates customers to engage in functional comparison to compare the perceived value of the incumbent with that of the new brand to justify the action to resolve the existing relationship As we reviewed previously, it is relative perceived value rather than perceived value per se that drives customer switching Because customers base their expectations and subsequent satisfaction on prior experience (Bolton and Drew 1991), customers who are familiar with incumbent brands use their existing relationships with those brands as a reference point to evaluate new brands Only brands that can exceed that reference point on the gain side might cause customers to switch This suggests the following hypothesis

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[1] Relative CBI differs from brand salience (e.g., Alba and Chattopadhyay 1986) in at least three ways. First, and most important, customers may report high brand salience for brands for somewhat superficial reasons, such as memorable advertising. In contrast, relative CBI denotes a higher level of incorporation of one brand in relation to other brands in the product category into the self. Second, relative CBI takes into account both individual perception and the social context in that much of the brand's social identity (e.g., through its brand community; Muniz and O'Guinn 2001) influences customers' identification with that brand. Third, relative CBI induces customers to engage in behavior that goes beyond repurchase intention, such as defending the brand against libels (Bhattacharya and Sen 2003). In terms of operationalization, brand salience is a buyer's ease of recalling the brand as a member of the product category (Alba and Chattopadhyay 1986). Relative CBI goes beyond recalling to capture customers' awareness, evaluation, and feelings of belongingness to a brand.

> H_1 At the time of the new brand's introduction, the greater the relative perceived value of the incumbent brand, the lower is the probability that a customer will switch to the new brand

Relative CBI and brand switching Social cognition research suggests that the self and its identities represent a highly complex but enduring structure in memory (Epstein 1980, Kihlstrom and Klein 1994) In support, previous experimental research has demonstrated that identity-driven judgment is enduring despite several corrective measures because a salient identity triggers an "elaborate self-relevant schema that may be difficult to undo because of its entrenchment in the self" (Bolton and Reed 2004, p 398) Because such entrenchment causes customers to believe that their identity-based relationships with the incumbents are highly irresolvable, they may choose to endure the existing relationships rather than taking actions when there is a more attractive identity (e g , Slotegraaf and Inman 2004)

The introduction of a radically new brand creates an identity threat to the incumbents We posit that though customers who have an identity-based relationship with the incumbents decide to endure, they will cope with the dissonance by engaging in identity-based comparison In doing so, these customers are driven by social creativity (Elsbach and Kramer 1996, Tajfel and Turner 1979) By focusing on selective comparative dimensions, customers of an incumbent brand engage in motivated reasoning that is biased in favor of the incumbent (Ahluwalia 2000, Kunda 1990) In other words, social creativity enhances the desirability of the incumbent brand's identity while downplaying the attractiveness of the new entrant's identity As long as social creativity is successful, customers' identification with the incumbent brand will dominate their identification with the new brand Customers who possess stronger relative CBI with the incumbent will consider the incumbent's identity more salient Because a salient identity forms the basis for behavior in congruence with the identity (Bolton and Reed 2004, Tajfel and Turner 1979), these customers will remain supportive of the incumbent brand and be less likely to switch to the new brand Therefore, we propose the following hypothesis

> H_2 At the time of the new brand's introduction, the greater the relative CBI of the incumbent brand, the lower is the probability that a customer will switch to the new brand

Longitudinal Effects

Relative perceived value and brand switching There are at least two reasons suggesting that iterations of functional comparison do not work in favor of the incumbent over time First, the social cognition literature suggests that judgment based on analytical thinking, such as maximizing functional utility, is likely to be evenhanded rather than top down in nature (e g , Bolton and Reed 2004) Thus, the incumbent brand will not be able to enjoy the biased comparison that would otherwise be available because of identity-driven motivated reasoning (Kunda 1990, Oyserman 2009) Second, recalling all functional attributes to conduct interbrand comparisons can be cognitively taxing because of customers' limited cognitive ability to identify all possible product/service attributes Such comparisons may be subject to ceiling effects that work against the incumbent brands and favor the new brand In support of this, Tversky and Kahneman (1982) propose the availability heuristic in decision making, such that the difficulty in retrieving reasons may lead people to infer that the amount of information is rather limited Research on attitude change further demonstrates that attribute retrieval difficulty, either actual or imagined, may actually reverse customers' attitude about a brand from positive to negative (Wänke, Bohner, and Jurkowitsch 1997) In general, information about the new brand is more readily available and more positive than information about the incumbent brands Over time, customers may come to think that the positive attributes of the incumbent are limited Note that this process may impair the perceived value of the incumbent relative to the new brand, making the resolvability of the functional utility–based relationship even more obvious after multiple iterations of functional comparison These two arguments suggest that though relative perceived value reduces resistance to switching, its effects will not increase, and might even decrease, over time Therefore, we hypothesize the following

> H_3 The effect of relative perceived value of the incumbent brand on resistance to switching to the new brand will not increase over time

Relative CBI and brand switching Social identity theory does not offer any information about the limits of social creativity or its longitudinal effect However, there are theoretical reasons to believe that iterations of identity-based comparisons work in favor of the incumbent over time First, customers who identify with the incumbent brand more strongly than with the new brand are likely to attribute their brand choice to the self rather than to superficial functional benefits Social psychology literature suggests that while people all have the need for self-enhancement, they are highly reluctant to change their self-related attitude because the need for self-consistency is also prevalent (Festinger 1957, Lecky 1945, Swann, Rentfrow, and Guinn 2003) By iteratively engaging in social creativity in favor of the incumbent brand's identity, customers maintain the consistency of their self, uphold the identity they derive from being associated with the incumbent brand, and regain their self-esteem without needing to engage in social mobility

Second, there is evidence suggesting that social creativity driven by a deeply seated psychological state, such as identification, is biased toward the incumbent brand's identity despite counterattitudinal arguments (e g , Ahluwalia 2000, Kunda 1990) Over time, these biases become self-perpetuating, leading to further biases Specifically, although social creativity begins as an illusion of objectivity that biases customers into justifying the superiority of the incumbent brand's identity to the new brand's identity, these customers will continue to support the incumbent In turn, this continued supportive behavior will make them believe that the incumbent brand's identity is indeed superior (Bem 1967) Note that these processes also incrementally increase the perceived irresolvability of the identity-based relationships with the incumbent These arguments suggest that the effect of relative CBI will generate increasingly stronger resistance to switch Therefore, we hypothesize the following

> H_4 The effect of the relative CBI of the incumbent brand on resistance to switching to the new brand will grow stronger over time

H_3 and H_4 suggest that, over time, the effect of relative CBI of the incumbent brand on resistance to brand switching will grow stronger while that of relative perceived value will remain stable This leads to the following corollary about the relative strength of these two customer–brand relationship drivers in predicting customer loyalty in the long run

> H_5 The effect of the relative CBI of the incumbent brand on customer switching to the new brand will be stronger than the effect of relative perceived value of the incumbent brand over time

Empirical Study

Sample

A large European online panel research company allowed us to track a subset of its panel in Spain The research context was the initial launch of the iPhone in Spain The iPhone's launch was particularly suitable for the research questions for several reasons First, Apple adopted a sequential launch of this new version in various European countries and entered into an exclusive distribution contract with a national service provider in each country Therefore, this launch provided a natural starting point of the disruption to all Spanish consumers Second, the reputation of the iPhone brand and the publicity surrounding its launch were unprecedented When the iPhone was introduced for the first time in the United States in 2007, it was named the innovation of the year by *Time* magazine Before the launch in Spain, Apple kept the name of its exclusive distributor in Spain (Telefonica) a secret until the last minute and kept delaying the official launch The anticipation among Spanish customers ran even higher when Apple launched the same brand in the United Kingdom, France, and Germany before entering the market in Spain To generate buzz, Apple and Telefonica engaged in a multiple-communications campaign to promote the new brand, complete with a prepurchase announcement on Telefonica's Web site Consequently, most consumers in Spain were exposed to abundant information about the iPhone's functionality, brand image, pricing, and service plans well before the actual launch Third, the cell phone market in Spain was highly competitive, and switching costs were high because consumers were locked in to long-term contracts These market characteristics provide the most stringent test of the hypotheses

We developed the initial survey in English and then had it translated into Spanish by a professional translation service Two native Spanish speakers completed and checked the wording of the survey The survey was then revised, back translated, and finally programmed in Spanish We then sent links to the online survey to panel members There were five waves of the surveys We conducted the first wave two months before the actual launch of the iPhone in Spain The screening questions in the first wave pertained to whether the panel members owned a cell phone and their awareness of the launch of the iPhone We removed those who were not aware of the iPhone (less than 3 on a seven-point Likert scale) from the survey We carried out the other four waves at two-month intervals, with the second wave launched approximately ten days after the actual launch Each wave was "live" for approximately two weeks The five waves occurred at two-month intervals from one another To enhance the response rates, we entered panel members into a raffle to win a prize if they completed all waves of the survey

We used discrete hazard models to capture switching behavior We defined an event as switching to the iPhone, which we assumed followed a two-stage process the customer developed the switching ideation, after which it may or may not turn into actual switching behavior (e g , Van den Bulte and Lilien 2004) We define switching ideation as the first time the customer thought of switching to the iPhone We were able to monitor 708 cell phone users over the entire duration of the study Of these, we removed 29 consumers who reported using the iPhone before the official launch (left censored, these consumers might have bought the illegally unlocked version before the official launch in Spain) The final data set included 679 usable responses We recorded switching to brands other than the iPhone as a competing event and treated these switches as right censored (Kleinbaum and Klein 2005) Among the 679 responses, 356 customers had the ideation to switch to the iPhone, and 84 actually switched to the iPhone The sample was sociodemographically diverse 37 4% were women, 84 5% lived in an urban area, 60 1% were under the age of 30, 86 2% were employed, 48% were married, and 87 8% held a bachelor's degree

Measures

We measured CBI using six items The cognitive dimension consisted of two items (Bergami and Bagozzi 2000) The first item in this scale is a Venn diagram that shows the overlap between consumer identity and brand identity, such that the overlap represents the extent to which a consumer identifies with the brand This Venn diagram item originates from the interpersonal relationship literature (Levinger 1979). The second item is a verbal item, it was initially proposed by Bergami and Bagozzi (2000) to cross-validate the Venn diagram item, and it describes the identity overlap in words rather than visually. We measured consumers' affective identification with the brand using two items that are part of the well-cited organizational identification scale (Mael and Ashforth 1992). We used two items to evaluate whether the consumer thinks the psychological oneness with the brand is valuable to him or her individually and socially. We adapted these items from Bagozzi and Dholakia (2006). We measured perceived value with four items adapted from Dodds, Monroe, and Grewal (1991), tapping into consumers' perceptions about the benefits after considering the price and other costs incurred for their cell phone.[2]

Consumers rated CBI and perceived value for both their current brand of cell phone and the iPhone. We created composite scores for each of the scales by first norming all measure items to be on a seven-point scale and then averaging the scores. Then, we constructed the relative CBI index by dividing CBI with the incumbent brand by the sum total of CBI with the incumbent brand and the iPhone; we then normed this index to a seven-point scale to facilitate comparison across predictors. We operationalized relative perceived value in the same way. Conceptually, as Dick and Basu (1994, p. 101, emphasis in original) note, "the nature of *relative attitudes* is likely to provide a stronger indication of repeat patronage than the attitude toward a brand determined in isolation." The relative indexes capture two important dimensions that underlie a person's relative attitude toward an entity: attitude strength (e.g., how strong the CBI is with the incumbent) and attitudinal differentiation (e.g., how much stronger CBI is with the incumbent than CBI with the new brand, given the sum of the two ratings). Because these relative indexes capture "shares" of CBI and perceived value of the incumbent, they removed the measurement unit from the interval scale (Cooper and Nakanishi 1983) and normed the raw "share" index of both predictors to be within the same range of [0, 1]. The indexes were similar in nature to relative market share in the multiplicative competitive interaction model (Cooper and Nakanishi 1983). Recent empirical research has also suggested that the relativity in customer ratings of various competitors in a market is important in studying customer behavior (Ahearne, Jelinek, and Jones 2007).

Customers named the brand of cell phone they were currently using at the beginning of each survey along with the name of the service provider. We asked about switching ideation and the brand they would consider switching to from a list of brands at the end of the survey. Actual switching occurred if we observed a change in use of each customer's current brand. Because we conducted this study in the context of a new brand introduction into an existing market, we controlled for customers' innate innovativeness (Steenkamp and Gielens 2003) and sociodemographic variables (sex and age). Because cell phone consumption also involves a service provider and customers who already had a contract with an iPhone distributor might have been able to switch to the iPhone at a much lower switching cost, we controlled for each customer's current service provider by using a dummy (1 for customers whose current service provider was also the exclusive distributor of the iPhone in Spain and 0 otherwise) and the customer's satisfaction with the current service provider. In addition to relative perceived value, relative CBI, and variables related to service providers, other types of switching costs may cause customers to keep buying a brand. We included two types of self-reported nonrelational switching costs: procedural costs and financial costs. Procedural switching costs consist of economic risk, evaluation, learning, and setup costs. Financial switching costs refer to lost benefits and financial loss (Burnham, Frels, and Mahajan 2003). Customers with high nonrelational switching costs feel trapped in their relationship with brands (Jones and Sasser 1995). Previous research has found that financial and procedural switching costs are positively related to intentions to stay with a service provider (Burnham, Frels, and Mahajan 2003). We operationalized financial switching costs objectively as the number of months left in each customer's contract with his or her current service provider. We measured procedural switching costs with five items that we adapted from Burnham, Frels, and Mahajan (2003). Scale items of each construct measure for each wave appear in the Appendix.

Model Specification

Because the dependent variable is an event (switch/not switch), we adopted survival analysis as the analytical methodology and specified the logit link. We developed a two-stage survival model with the survey data with five periods $t = 1, 2, \ldots, T$ and individuals $i = 1, 2, \ldots, n$. In this model, individual i first develops switching ideation before switching to the iPhone. We further define $z_{is_i} = 1$ when individual i first indicates switching ideation during period s_i. By definition, $z_{is_i} = 0$ for all $s < s_i$ (individual i can form switching ideation only once). Let $y_{it_i} = 1$ when individual i switches during period t_i, and similarly, let $y_{it_i} = 0$ for all $t < t_i$ (individual i can switch only once during the study). Individual i's utility of the focal brand during period t is $u_{it} = v_{it} + \varepsilon_{it}$, where we assume the error term ε_{it} to follow an i.i.d. logistic distribution. This utility comes from both relative functional value and relative CBI of the incumbent brand relative to those of the new brand. The utility governs individual i's behavior in both ideation to switch and actual switching behavior to the new brand, in which actual switching requires the utility to pass a higher bar $\pi > 0$ That is, individual i's probability of ideation to switch to the iPhone, given that he or she has not considered it yet, is as follows

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[2] It could be argued that consumers may have difficulty answering these questions without actual use. However, we believe that this is not the case for our research context. First, the sequential launch of the iPhone in Europe was one of the most hyped product launches. The zealous promotion campaigns throughout Europe and in Spain made consumers well aware of the iPhone's functionality, price, and brand image without actually using it. Second, brand identification is not contingent on actual use. For example, a consumer can identify with a luxury brand without being able to afford it. Most important, the survey questions captured the information consumers had when they made their decision. The use of the same set of items allows for comparison of the incumbents and the new brand. Finally, in our data, none of the consumers who were aware of the launch reported problems in answering the survey questions in the comment box at the end of the survey. We thank an anonymous reviewer for pointing this out.

$$(1)\quad p_{is} = \Pr\left(z_{is_i} = 1 \mid z_{is} = 0, s \geq s_i\right) = \text{PR}\left(u_{is} > 0\right) = \frac{\exp\left(v_{is}\right)}{1 + \exp\left(v_{is}\right)}$$

Individual i's probability of actually switching, given that he or she has stated switching ideation but has not switched yet, is as follows

$$(2)\quad \begin{aligned} h_{it} &= \Pr\left(y_{it_i} = 1 \mid z_{is_i} = 1, t \geq s_i, y_{it} = 0, t < t_i\right) \\ &= \Pr\left(u_{it} > \pi\right) = \frac{\exp\left(v_{it} - \pi\right)}{1 + \exp\left(v_{it} - \pi\right)} \end{aligned}$$

We further specify the deterministic part of the utility as follows

$$(3)\quad \begin{aligned} v_{it} = {} & \alpha_1 + \alpha_2 D_2 + \alpha_3 D_3 + \alpha_4 D_4 + \alpha_5 D_5 + \beta^{(t)}_{RCBI}\text{RCBI}_{it} \\ & + \beta^{(t)}_{RPV}\text{RPV}_{it} + \gamma_1 \text{SWF}_{i,t-1} + \gamma_2 \text{SWP}_{i,t-1} + \gamma_3 \text{PROV}_{it} \\ & + \gamma_4 \text{PRSAT}_{i,t-1} + \gamma_5 \text{INNOV}_i + \gamma_6 \text{GENDER}_i + \gamma_7 \text{AGE}_i + \lambda_i, \end{aligned}$$

where D_t represents time dummies, RCBI is the relative CBI of the incumbent, RPV is the relative perceived value of the incumbent, SWF are financial switching costs, SWP are procedural switching costs, PROV is the service provider (dummy coded), PRSAT is satisfaction with the service provider, and INNOV is the customer's innate innovativeness

We assume that the effects of covariates are stable over time We used a random-effects model in which the random effect $\lambda_i \sim N(0, \sigma^2)$ captures the heterogeneity across customers To capture the dynamic effects of relative CBI and relative perceived value, we adopted a first-order autoregressive setting for the coefficients More specifically,

$$(4)\quad \beta^{(t)}_{RCBI} = \rho_{RCBI}\beta^{(t-1)}_{RCBI} + \xi_{RCBI}, \text{ and}$$

$$(5)\quad \beta^{(t)}_{RPV} = \rho_{RPV}\beta^{(t-1)}_{RPV} + \xi_{RPV}$$

This approach provides a parsimonious parametric structure with only two parameters, $\beta^{(1)}$ and ρ, for relative CBI or relative perceived value We placed no restriction on the decay parameter ρ so that its size and sign would reflect the trend and stability of the trend in the time-varying coefficients, respectively If $\rho > 1$, the effect of the predictor increases over time If $\rho = 1$, the effect of the predictor is stable Finally, if $0 < \rho < 1$, the effect of the predictor decays over time If $\rho < 0$, the effect of the predictor fluctuates between increasing and decaying The likelihood for individual i is as follows

$$(6)\quad L_i = \prod_{t=s_i}^{t_i} h_{it}^{\,y_{it}}\left(1 - h_{it}\right)^{1 - y_{it}} \prod_{s=1}^{s_i} p_{is}^{\,z_{is}}\left(1 - p_{is}\right)^{1 - z_{is}}$$

The overall log-likelihood for both stages (switching ideation and actual switch) is as follows

$$(7)\quad \begin{aligned} LL = \sum_{i=1}^{n} \Bigg\{ & \sum_{t=s_i}^{t_i} \left[y_{it}\ln\left(h_{it}\right) + \left(1 - y_{it}\right)\ln\left(1 - h_{it}\right)\right] \\ & + \sum_{s=1}^{s_i} \left[z_{is}\ln\left(p_{is}\right) + \left(1 - z_{is}\right)\ln\left(1 - p_{is}\right)\right] \Bigg\}, \end{aligned}$$

where s_i is the period when individual i began to consider switching and t_i is the period when he or she switched

Results

Measurement model We subjected all reflective constructs first to exploratory factor analysis and then to confirmatory factor analysis For reflective constructs, we evaluated measure reliability and validity by examining the loadings of items on their intended latent constructs, Cronbach's alphas, average variances extracted (AVEs), and interconstruct correlations The results indicated that all the constructs exhibited good psychometric properties

We conceptualize CBI as a formative second-order construct consisting of three reflective first-order dimensions We used partial least squares to evaluate the measurement model of this construct Because measures of internal consistency and reliability are inappropriate for assessing the psychometric properties of formative constructs (Jarvis, MacKenzie, and Podsakoff 2003), we evaluated the measurement scales of CBI by examining the path weights of each of the three dimensions of this construct for both the iPhone and the incumbent brands (see the Web Appendix at http //www marketingpower com/jmnov10) We adopted the method of repeated indicators for molar models to assess path weights of each first-order factor on the second-order construct (Wold 1982) The results showed that all path weights were significant, suggesting that the measurement model was sound

Because the calculation of AVE is meaningful only for reflective constructs, it is not possible to assess discriminant validity by comparing the square root of the AVE with the pairwise correlations between reflective (perceived value and procedural switching costs) and formative (CBI) constructs Instead, we concluded that the measures met the criteria for discriminant validity because (1) none of the measures cross-loaded more heavily on their unintended constructs than on their own and (2) all the unattenuated construct intercorrelations were significantly less than 1 00 In addition, we estimated a series of models in which we assumed CBI to be a second-order reflective construct We first freely estimated the correlation between this CBI construct and perceived value, and we then constrained that correlation to be equal to one All the constrained models had significantly worse fit This proxy calculation (which is available on request) provided further evidence for the discriminant validity between CBI and perceived value Table 2 reports the correlations among the constructs All AVEs exceeded or were close to the benchmark of 50 (Fornell and Larcker 1981) We computed composite scores of the focal constructs to run the estimation

Estimation results Table 3 presents the results for three models Model A is the baseline hazard model without pre-

TABLE 2
Means, Standard Deviations, and Intercorrelation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1 RCBI_T1	1 00																						
2 RCBI_T2	54**	1 00																					
3 RCBI_T3	53**	75**	1 00																				
4 RCBI_T4	46**	74**	78**	1 00																			
5 RCBI_T5	48**	65**	72**	76**	1 00																		
6 RPV_T1	50**	44**	40**	37**	36**	1 00																	
7 RPV_T2	27**	57**	52**	52**	43**	46**	1 00																
8 RPV_T3	30**	43**	58**	51**	45**	46**	68**	1 00															
9 RPV_T4	28**	44**	52**	62**	50**	45**	61**	68**	1 00														
10 RPV_T5	30**	46**	48**	54**	67**	42**	55**	60**	61**	1 00													
11 SWP_T1	15**	21**	14**	17**	20**	10**	14**	11**	11**	17**	1 00												
12 SWP_T2	12**	16**	13**	14**	15**	07	06	05	07	12**	56**	1 00											
13 SWP_T3	07	14**	10*	15**	14**	00	10*	04	08*	11**	52**	61**	1 00										
14 SWP_T4	13**	17**	12**	15**	18**	04	08*	06	10*	13**	52**	57**	61**	1 00									
15 SWF_T1	07	04	03	−04	00	05	04	−01	−01	04	04	01	09*	02	1 00								
16 SWF_T2	08*	06	08	05	09*	08	02	02	08	08	06	03	08*	05	58**	1 00							
17 SWF_T3	07	10*	09*	12**	11*	07	10*	07	07	10*	04	00	03	05	27**	46**	1 00						
18 SWF_T4	06	13**	14**	15**	11*	06	09*	08	07	07	06	04	06	09	21**	39**	69**	1 00					
19 PRSAT_T1	21**	10**	19**	11**	17**	04	00	06	03	04	00	07	05	02	04	08	03	04	1 00				
20 PRSAT_T2	21**	14**	20**	15**	18**	02	02	07	05	07	03	07	02	−01	07	04	00	01	58**	1 00			
21 PRSAT_T3	17**	10*	13**	10*	10*	07	04	03	05	−01	−04	03	−01	02	01	01	−02	−01	55**	65**	1 00		
22 PRSAT_T4	12**	08	16**	12*	11*	−02	01	05	08	−01	−01	03	06	06	02	02	−04	−02	48**	52**	58**	1 00	
23 INNOV	−17**	−23**	−19**	−20**	−12**	−12**	−12**	−11**	−12**	−13**	−24**	−19**	−19**	−16**	−07	−02	−04	−11*	01	−05	00	−04	1 00
M	3 77	3 80	3 83	3 91	3 94	3 82	3 83	3 83	3 89	3 92	3 46	3 59	3 68	4 01	10 5	10 1	10 5	9 8	4 64	4 53	4 55	4 77	3 28
SD	68	65	67	70	72	68	70	70	69	68	1 29	1 28	1 30	1 30	7 31	7 64	8 18	8 23	1 29	1 27	1 25	1 25	1 01

*p < 05

**p < 01

Notes N = 679 RCBI = relative CBI, RPV = relative perceived value, SWP = procedural switching costs, SWF = financial switching costs (number of months left in contract), PRSAT = satisfaction with the current service provider, and INNOV = consumer innate innovativeness SWP, SWF, and PRSAT were lagged one period Thus, Wave 5 data for these variables were not used

TABLE 3
Results of Discrete-Time Hazard Models

Parameter Estimates	Model A (Baseline)	Model B (Covariates Only)	Model C (Full Model)
Intercept	–1 27** (09)	–1 97** (42)	1 65* (73)
D2	– 09 (13)	– 16 (17)	22 (48)
D3	– 76** (17)	– 80** (20)	– 01 (78)
D4	–1 25** (21)	–1 27** (23)	03 (97)
D5	–1 35** (23)	–1 34** (25)	67 (1 30)
Covariates			
Switching costs financial		– 02 (01)	– 04* (01)
Switching costs procedural		– 11* (05)	– 05 (05)
Satisfaction with service provider		– 03 (04)	03 (05)
Consumer innate innovativeness		34** (06)	30** (06)
Service provider[a]		46** (11)	62** (12)
Sex (female = 0)		25* (12)	25* (13)
Age		– 01 (01)	– 00 (01)
Focal Predictors and Decay			
Relative perceived value			– 72** (19)
Relative perceived value decay ρ_{RPV}			88** (19)
Relative CBI			– 37** (15)
Relative CBI decay ρ_{RCBI}			1 33** (20)
Switching threshold π	88** (15)	1 06** (15)	1 52** (16)
Random effect σ	33** (11)	28** (13)	34** (12)
Goodness of Fit			
–2 log-likelihood	2359 50	2289 60	2133 70
Parameters estimated	7	14	18
AIC	2373 50	2317 60	2169 70
BIC	2398 30	2367 00	2233 30

*$p < 05$
**$p < 01$
[a]iPhone exclusive distributor = 1 and 0 otherwise
Notes Standard errors are in parentheses AIC = Akaike information criterion, and BIC = Bayesian information criterion

dictors, Model B is the covariates-only model, and Model C is the final model In testing the hypotheses, after running Model B, we added the focal predictors (relative CBI and relative perceived value) one at a time to test whether they improved the overall model fit These intermediary steps showed that models that include either relative CBI or relative perceived value are superior to the covariates-only model (ΔAkaike information criterion = 116 90 and 127 00, respectively) This suggests that these two predictors significantly predict brand switching

H_1 and H_2 predict that at the time of the new brand's introduction, customers who perceive the incumbent brand as providing higher value or who identify more strongly with the incumbent brand than with the new brand will be less likely to switch The result in Table 3 confirms both hypotheses More specifically, both relative perceived value ($\beta = -72$, $p < 01$) and relative CBI ($\beta = -37$, $p < 01$) greatly reduced the switching probability A two-tailed test showed that for the initial stage, the effect of relative perceived value was not significantly stronger than that of relative CBI ($\Delta\beta = 35$, SE = 30, not significant) Note that the dependent variable in the initial stage was only switching ideation and not actual switching, because the iPhone was launched two months after the first wave of survey

The decay of these effects was also in the direction that H_3 and H_4 predict More specifically, the decay of effect of relative perceived value was greater than zero ($\rho = 88$, $p < 01$) but not significantly greater than one ($t = -65$, not significant) This means that the effect of relative perceived value does not increase over time, in support of H_3 The results also show that the decay of effect of relative CBI was positive ($\rho = 1\ 33$, $p < 01$) and significantly greater than one ($t = 1\ 65$, $p < 06$), in support of H_4 This suggests that as time elapses, the effect of relative CBI on switching behavior becomes stronger, while the effect of perceived value on switching remains stable

Given that (1) the initial strength of the two predictors is not significantly different from each other and (2) the decay parameters support H_3 and H_4, there is sufficient evidence to conclude that the overall time-varying effect of relative CBI is stronger than that of relative perceived value, as H_5 predicts Figure 2 shows how the slope coefficients of relative CBI and relative perceived value change over time

In terms of switching costs as covariates, customers who already had a contract with the iPhone exclusive distributor were more likely to switch Customers who had recently signed contracts were less likely to switch These results are in agreement with the literature However, the effect of procedural switching costs was not significant

General Discussion

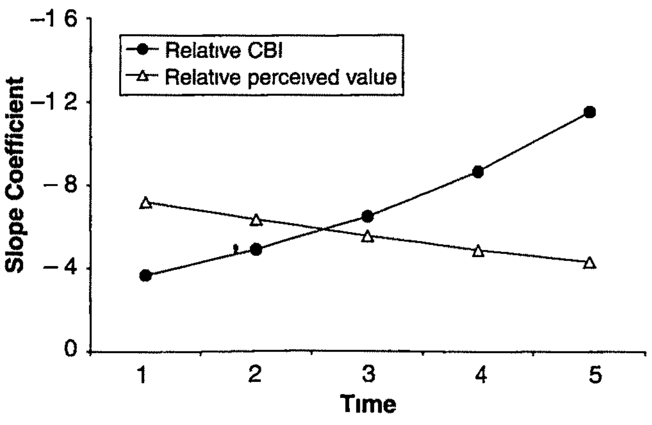
This study is the first to test empirically the longitudinal effect of relative CBI and relative perceived value in times of market disruptions while controlling for switching costs and key customer characteristics In addition to our theorization of switching behavior as both utility maximization and social mobility, this study complements the existing macrolevel literature on innovation and new product adoption with an in-depth, microlevel examination of the competitive dynamics of new brand adoption from the customer's perspective In doing so, we integrate the enduring effect of customer–brand relationship drivers during market disruptions into the brand loyalty and relationship marketing literature streams

Discussion of Findings and Theoretical Implications

In the loyalty literature, findings on the longitudinal effect of loyalty predictors have been mixed For example, Garbarino and Johnson (1999) report that satisfaction, an affective construct, is the key loyalty driver of newer customers, while commitment, a cognitive construct, plays a more important role for older customers Consistent with this, in a series of longitudinal experiments, Homburg, Koschate, and Hoyer (2006) show that as the number of experiences increases over time, the influence of cognition increases, whereas the influence of affect decreases, provided that consumption experiences are consistent Conversely, in a three-period longitudinal study, Johnson, Herrmann, and Huber (2006) report that loyalty intentions are a function of perceived value (largely cognitive in nature) early in the product life cycle and that affective attitudes toward the brand become a more important driver later in the cycle However, they do not control for switching costs In a similar vein, Mittal and Kamakura (2001) show that the relationship between customer satisfaction and repurchase intention and that between customer satisfaction and actual repurchase do not follow the same trajectories Thus, our study underscores the importance of studying both switching ideation and actual switching behavior and the significance of including both utilitarian and psychological switching drivers in evaluating customer relationships with brands (e g , Keller 2008, p 85)

Our findings can be extended to research on social identification in other fields, such as research on employee turnover (e g , Is turnover caused by job dissatisfaction or by another attractive organizational identity?) and intergroup relationships (e g , How do stigmatized groups reduce social mobility over time?) Here, we limit our discussion to three implications for marketing theory First, we found strong support for the theorization of dual switching drivers Previous research has recognized that customers may switch for various reasons (e g , Keaveney 1995), but the bulk of the literature on brand switching focuses heavily on functional benefits as the key reason for switching behavior and largely ignores sociopsychological benefits In this study, we found that cross-sectionally, relative CBI and relative perceived value appear to be equally strong in predicting customer loyalty This is consistent with Vogel, Evanschitzky, and Ramaseshan's (2008) findings However, the longitudinal effects of relative CBI and relative perceived value suggest that the effects of relative CBI stand the test of both time and competitive attacks and that, in the long run, the effect of relative CBI may be stronger than that of relative perceived value This finding resonates with Rust, Zeithaml, and Lemon's (2000) perspective that while brands provide customers with meaning, customers decide the value of brands More broadly, our study demonstrates that customers can be proactive yet selective identity seekers, as consumer culture theory suggests (Arnould and Thompson 2005)

FIGURE 2
Longitudinal Effects of Decay Parameters



Second, this study contributes to the burgeoning literature on customer–company identification (Ahearne, Bhattacharya, and Gruen 2005, Bhattacharya and Sen 2003) and, more broadly, on relationship marketing with the internal and external publics of the firm from a social identity perspective Specifically, we highlighted the importance of examining the relativity of identification as a relationship driver in a competitive setting In addition, although the findings suggest that in their multifaceted relationships with brands, customers' psychological bonding with the brand appears to create a stronger resistance to switch than functional utilitarian value, maintaining relative perceived value is also critical because the switching-resistance effect of relative perceived value is fairly strong and stable

Third, this study suggests that different market conditions call for a different focus of brand-performance predictors Here, we demonstrate that in a competitive setting, relative CBI may serve as a predictor of brand performance in times of market disruptions (Bhattacharya and Lodish 2000) Although theorization about brands' longitudinal effect is not new (e g , Keller 1993), our study is among a few empirical investigations to examine the predictors of customer switching behavior in times of market disruptions in a natural setting Given the prevalence of these incidents and the speed of innovation, an understanding of the longitudinal effects and the relative strength of customer–brand relationship drivers over time is not trivial and elicits several other research questions that we detail subsequently

Managerial Implications

This study has important implications for brand and customer relationship managers, in both business-to-consumer and business-to-business contexts In terms of a corrective strategy, our study suggests that the often-used practice of persuading customers who have switched to a competitor by offering them financial incentives can be futile This is because customers may switch to a competitor for identity enhancement reasons rather than for functional utility maximization If customers switch to another brand for utilitarian reasons, a price cut or an attractive value proposition may regain them in the short run However, customers who switch for identity reasons will not respond well to utilitarian incentives In addition, customers in this latter group may switch for good, as the stickiness of CBI in our empirical findings suggests For this latter group, customer relationship managers will need to decide whether the firm can change its identity to attract these customers again This strategic move is known as rebranding Because rebranding often requires a costly overhaul of the firm's internal and external marketing strategies, customer relationship managers must have sufficient information on the composition of switchers to evaluate whether rebranding is worth pursuing Furthermore, our study suggests that managers who are revamping the identities of their brands must understand and act on two key issues the stickiness of the old identities and the competition from other brands' identities in the product category As much as the stickiness of relative CBI can help, it can also hurt

In terms of a preventive strategy, the findings suggest that building a strong brand identity can immunize brands from market disruptions (e g , Bhattacharya and Lodish 2000) In this regard, managers should not be dissuaded by a misperception that brand identification is only a luxury for high-involvement and/or publicly consumed brands Applying the symbolic interactionism perspective to consumer research, Solomon (1983, p 324) argues that "while some purchase or store patronage decisions are made as a result of direct and overt group pressure, much of the symbolic consumption process may take place within the private experience of the actor" Consumer culture theory (e g , Arnould and Thompson 2005) and our study suggest that brand managers of low-involvement, privately consumed product categories can and should devise strategies to build a well-defined brand identity A success story is Dove's "Campaign for Real Beauty" to move away from an emphasis on functional benefits to a brand identity for "real" women Creating a higher level of bonding with the brand through sociopsychological ties can be achieved in at least two ways On the one hand, the uniqueness or point of differences (Keller 2008) between the firm's offerings and those of competitors is critical On the other hand, strong brand identification also develops when the firm encourages its customers to engage in corporate-sponsored activities or cocreation so that they feel they belong to a meaningful social group (Bhattacharya and Sen 2003, Prahalad and Ramsaswamy 2004) In addition, our study suggests that in times of market disruptions, brand managers should not only emphasize the functional value proposition of their brands but also reinforce the brands' identities These activities will facilitate customers' social creativity in favor of the brands, thus creating a buffer from the shock

In terms of an offensive strategy, that the effect of relative perceived value might become weaker than that of relative CBI does not mean that managers should ignore the former altogether On the contrary, value investment may represent an area on which to focus to intensify its short-term effects to poach incumbent brands When customers have switched, managers should adapt their strategies to be more relationship based to build identification Finally, the findings imply that companies that try to disrupt the market may not be successful if their brands have attractive functional benefits but do not win the identity war

Limitations and Further Research

The results of this study should be interpreted with its limitations in mind First, we focused on only one product category and one focal brand (iPhone) from an atypical company (the well-known Apple Inc) Although this focus controls for industry-level effects and is appropriate for testing our framework, the generalizability of the results may be compromised For example, an important characteristic of durable markets is that they undergo fewer disruptions than nondurable markets, and yet each disruption is major and highly visible to customers (e g , introduction of an innovative technology platform) In nondurable markets, consumer learning and variety seeking may be more important in predicting switching behavior (e g , Van Trijp, Hoyer, and Inman 1996) However, given that the study context is stringent (high switching costs and high competition) and the empirical analysis provides strong support of theory, we believe that the results should hold in many other contexts Note that the correlation between relative CBI and switching costs is rather low, suggesting that switching costs do not induce higher relative CBI Nevertheless, further research in other product categories with low switching costs and different brands would be useful

Second, this study examines the longitudinal role of relative CBI in only one type of market disruptions However, market disruptions can take various forms Our literature review suggests that these disruptions can be categorized along at least three dimensions First, market disruptions can be expected (e g , new product preannouncements) or unexpected (e g , product failures) While unexpected market disruptions are abrupt, expected market disruptions afford customers sufficient time to learn about, plan for, and adapt to the disruptions Second, market disruptions can take place because of internal or external causes For example, markets may experience disruptions that the brand itself inadvertently causes (e g , Aaker, Fournier, and Brasel 2004) Disruptions can also be externally caused by conditions beyond the firm's controls, such as competitors' comparative advertising (e g , Allstate's "Switching is easy" campaign against Geico), competitors' heavy promotional campaigns (Bhattacharya and Lodish 2000), or product tampering (e g , Tylenol) Third, market disruptions may impair or bolster the brand image as perceived by external customers, thus influencing its identity An example is Johnson & Johnson's success in dealing with the Tylenol incident in 1982, a well-managed crisis that benefited how customers perceived the firm Our study focuses on the impact of the launch of the iPhone over the course of a year This launch represents a disruption that is expected (due to the preannouncement), externally caused (by the new entrant), and identity threatening (due to the new brand's distinct and attractive identity) Further research can explore whether our results apply to other types of market disruptions of a different nature

In the same vein, although the empirical evidence of the stickiness of CBI is a contribution to the literature, we do not measure the underlying processes For example, which dimension of CBI is stickier and more important? Furthermore, if CBI is important, perhaps further research should explore how CBI aspects evolve over time and what managers can do to improve specific aspects of CBI The answer to these questions by including more items for each CBI dimension should prove useful for theoretical advancement In this regard, the marketing literature seems to concur that the cognitive dimension of CBI is best measured by the two items we used The affective and evaluative dimensions of CBI need further scale development and refinement based on research in the marketing and psychology literature streams (e g , Henry, Arrow, and Carini 1999, Luhtanen and Crocker 1992, Thomson, MacInnis, and Park 2005) In doing so, researchers may also need to investigate how CBI differs from organizational identification because unlike an employee, customers are not formal members of the firm

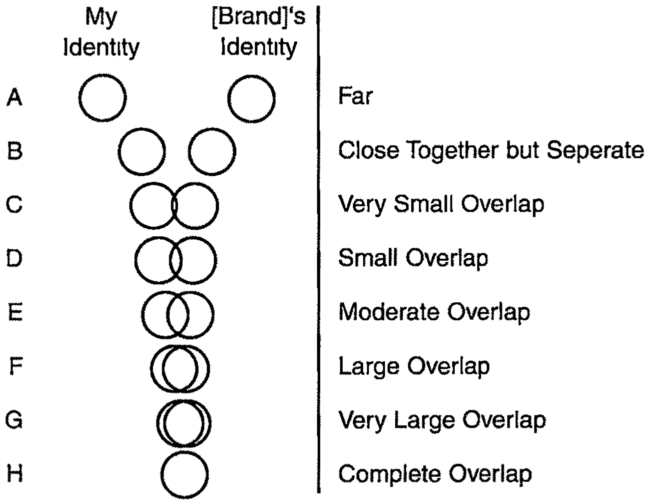
Finally, because of cost concerns, we were only able to track customers over a year after the market disruption A caveat of extending the temporal contiguity is that it might introduce into the process unwanted noise that dampens causality inference (Rindfleisch et al 2008) Nevertheless, studies with longer durations might reveal even deeper insights into customer–brand relationships, such as social influence and network effects (Rao, Davis, and Ward 2000)

APPENDIX
Construct Measures

CBI with Incumbent Brands and with iPhone (Adapted from Bagozzi and Dholakia 2006, Bergami and Bagozzi 2000, second-order formative construct)

Cognitive CBI (α = 60/ 72/ 73/ 74/ 75 for the iPhone, α = 66/ 67/ 71/ 72/ 70 for the current brand)

- •CBI1 (Venn diagram item)



- •CBI2 (Verbal item) "To what extent does your own sense of who you are (i e , your personal identity) overlap with your sense of what [brand] represents (i e , the [brand]'s identity)?" Anchored by –4 = "completely different," 0 = "neither similar nor different," and 4 = "completely similar"

Affective CBI (seven-point Likert scale, anchored by "strongly disagree/strongly agree", α = 86/ 86/ 86/ 89/ 90 for the iPhone, α = 84/ 84/ 83/ 87/ 84 for the current brand)

- •CBI3 "When someone praises [brand], it feels like a personal compliment"
- •CBI4 "I would experience an emotional loss if I had to stop using [brand]"

Evaluative CBI (seven-point Likert scale, anchored by "strongly disagree/strongly agree", α = 76/ 80/ 79/ 84/ 78 for the iPhone, α = 76/ 76/ 74/ 73/ 71 for the current brand)

- •CBI5 "I believe others respect me for my association with [brand]"
- •CBI6 "I consider myself a valuable partner of [brand]"

Perceived Value of the Incumbent Brand and the iPhone (Dodds, Monroe, and Grewal 1991, seven-point Likert scale, anchored by "strongly disagree/strongly agree" α = 92/ 93/ 94/ 93/ 93 for the iPhone, a = 90/ 92/ 93/ 93/ 93 for the current brand AVE = 75/ 76/ 78/ 78/ 78 for the iPhone, AVE = 70/ 74/ 78/ 77/ 77 for the current brand)

- •PV1 "What I get from [brand] is worth the costs"
- •PV2 "All things considered (price, time, and effort), (brand) is a good buy in the (category)"
- •PV3 "Compared with other (category) brands, [brand] is good value for the money"
- •PV4 "When I use [brand], I feel I am getting my money's worth"

Financial Switching Costs Number of months left in the contract with the service provider

Procedural Switching Costs (Burnham, Frels, and Mahajan 2003, seven-point Likert scale, anchored by "strongly disagree/strongly agree", α = 81/ 81/ 85/ 78/ 77 AVE = 50/ 50/ 54/ 49/ 48)

- •SWP1 "If I switched to another brand of cell phone, I might have to learn new routines and ways of using a new cell phone"
- •SWP2 "If I switched to another brand of cell phone, it might be a real hassle"
- •SWP3 "If I switched to another brand of cell phone, I might have to spend a lot of time finding a new cell phone"
- •SWP4 "I cannot afford the time to get the information to fully evaluate other brands of cell phone"
- •SWP5 "There are a lot of formalities involved in switching to a new brand of cell phone"

Satisfaction with the Current Cellular Phone Service Provider (Seven-point Likert, anchored by "strongly disagree/strongly agree", α = 89/ 89/ 89 for the first three waves [Item 2 was used as a single item for the last two waves] AVE = 56/ 92/ 78 for the first three waves, respectively)

- •SAT1 "The service provider for my cell phone offers outstanding service quality"
- •SAT2 "I am very satisfied with the service provider for my cell-phone"
- •SAT3 "The service provider for my cell phone handles all of my complaints in a satisfactory manner"

APPENDIX
Continued

Consumer Innate Innovativeness (Adapted from Steenkamp and Gielens 2003, seven-point Likert scale, anchored by "strongly disagree/strongly agree" α = 79 AVE = 53 Wave 1 only)

- •IN1 "In general, I am among the first to buy new products when they appear on the market"
- •IN2 "I enjoy taking chances in buying new products"
- •IN3 "I am usually among the first to try new brands"
- •IN4 "When I see a new product on the shelf, I'm reluctant to give it a try" (R)
- •IN5 "I am very cautious in trying new products" (R)
- •IN6 "I rarely buy brands about which I am uncertain how they will perform" (R)
- •IN7 "If I like a brand, I rarely switch from it just to try something new" (R)
- •IN8 "I do not like to buy a new product before other people do" (R)

Notes (R) = reverse-coded items

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Call for Papers:

JPP&M Special Issue on “Social Entrepreneurship”

Social entrepreneurship is attracting increasing attention from researchers in a variety of academic disciplines. There is a desire to create knowledge that could assist social entrepreneurs in combating problems involving poverty, health, the environment, and other areas. By social entrepreneurs, we mean “individuals who start up and lead new organizations or programs that are dedicated to mitigating or eliminating a social problem, deploying change strategies that differ from those that have been used to address the problem in the past.” Notable social entrepreneurs include (1) Mohammad Yunus, founder of the Grameen Bank’s microlending program in Bangladesh; (2) Wendy Kopp, founder of Teach for America, which places recent college graduates as teachers in inner-city schools for a two-year stint; and (3) Paul Farmer, founder of Partners in Health, which provides low-cost treatment for AIDS, tuberculosis, and other diseases in Haiti and throughout the developing world.

Scholars interested in public policy and marketing have the potential to offer considerable guidance to social entrepreneurs. Research work in areas such as consumer behavior, social marketing, branding, franchising, marketing strategy, and program/policy evaluation could be extended and built on to provide insights for social entrepreneurs. Papers for the special issue are sought in areas such as the following:

- What leads consumers/individuals to behave in ways that exacerbate certain social problems? Why do people act in self-destructive, selfish, unsafe, or antisocial ways, and what can social entrepreneurs or their organizations do to change these behaviors?
- What leads consumers/individuals to want to support the efforts of social entrepreneurs as volunteers, donors, investors, employees, or voters? How can more people be persuaded to become supportive?
- What strategies are most effective for scaling up the impact of a social entrepreneurial initiative? What role can branding, pricing, franchising, alliance building, advertising, and lobbying play? Are there best practices, or what practices should be avoided?
- How can cause marketing and similar alliances between social entrepreneurial organizations and corporations be configured to be win-win situations for both parties?
- How can the social impact of a social entrepreneurial initiative be measured and monitored?

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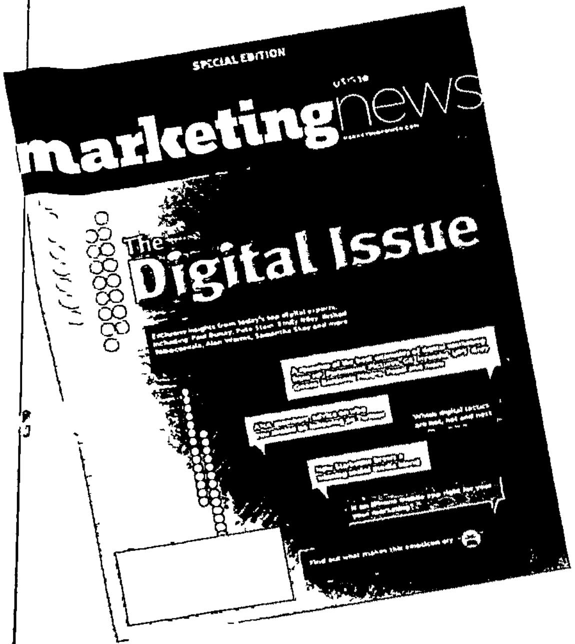

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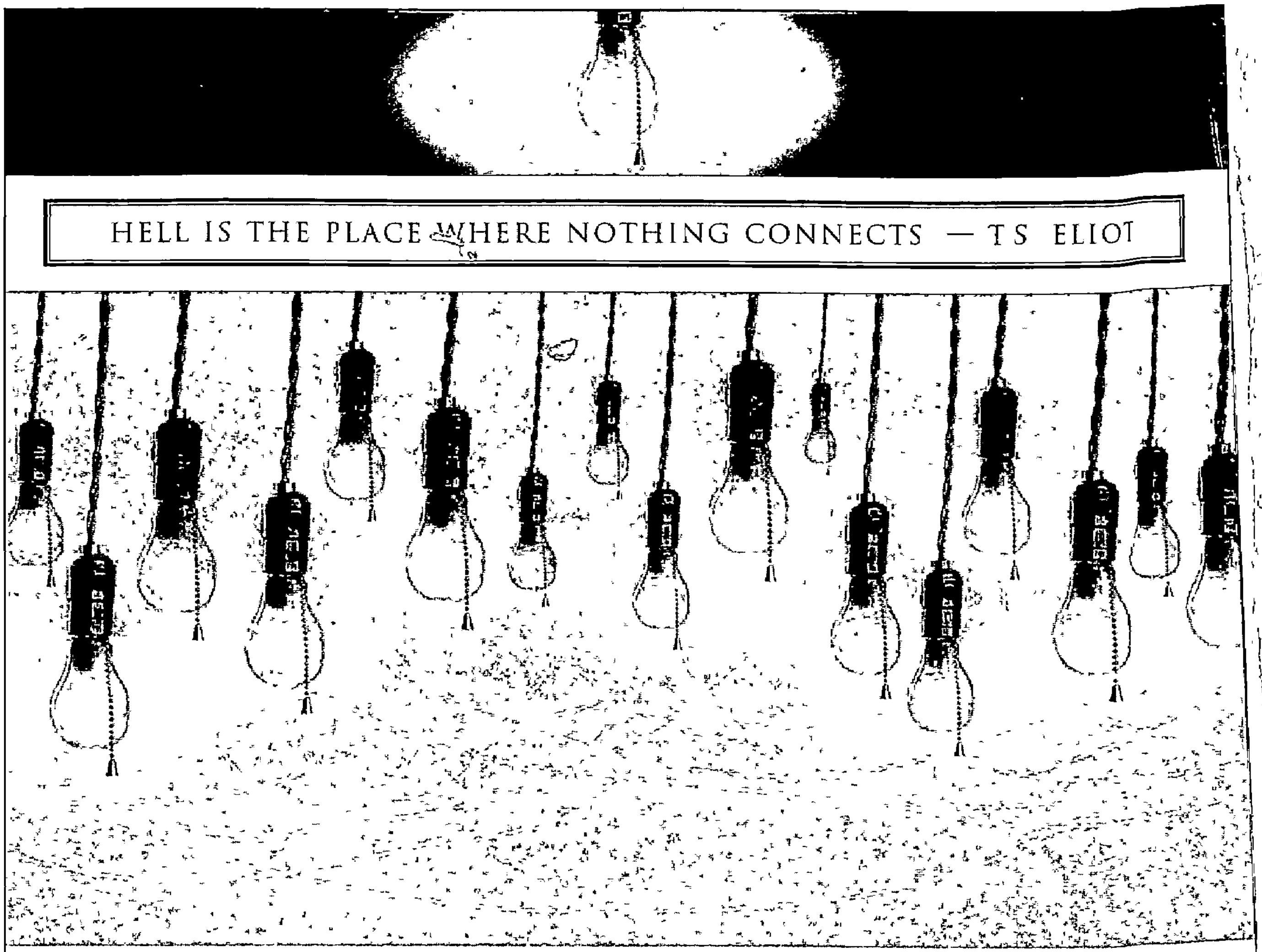

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